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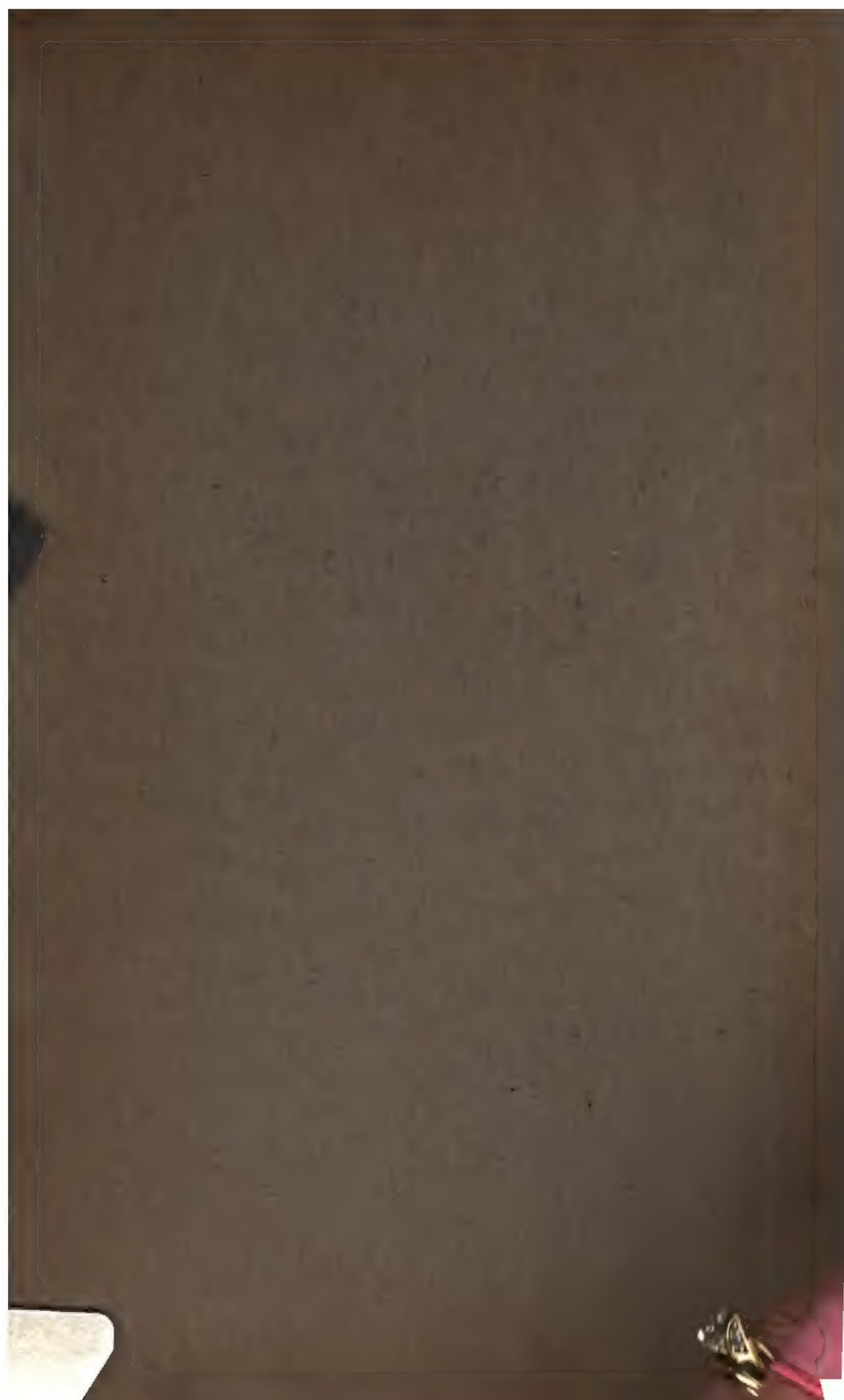
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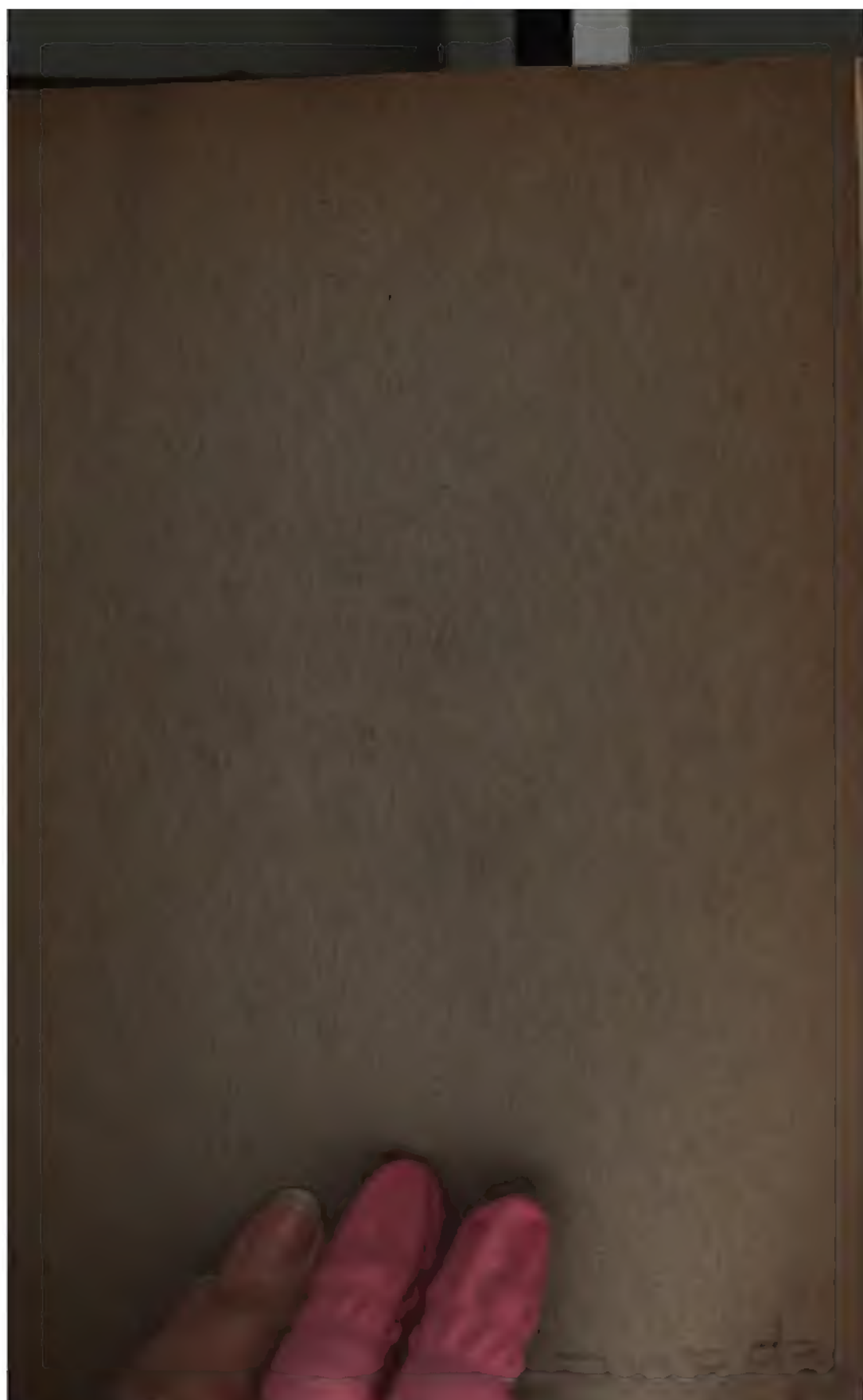
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GENERAL REPORT

OF THE

Canada - Minister

COMMISSIONER OF PUBLIC WORKS,

FOR THE

YEAR ENDING 31st DECEMBER, 1859:

FURNISHED

In compliance with the provisions of the 28th chapter of the Consolidated
Statutes of Canada, section 24.

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PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.  
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QUEBEC:

THOMPSON AND CO., PRINTERS, ST. URSULE STREET.

1860. *m*

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REPORT
OF THE
COMMISSIONER OF PUBLIC WORKS
FOR THE YEAR 1859.

To His Excellency the Right Honorable Sir Edmund Walker Head,

GOVERNOR GENERAL OF BRITISH NORTH AMERICA, &c., &c.

MAY IT PLEASE YOUR EXCELLENCY:

In accordance with the provisions of the 28th chapter of the Consolidated Statutes of Canada, section 24, the undersigned, Commissioner of Public Works, has the honor to submit to Your Excellency the following General Report upon the Public Works and Buildings, and the other branches of the Public service under his control and management, for the year 1859.

Before proceeding to advert to the condition of the various Public Works in detail, it may not be improper to observe, that during the past year attention has been closely directed to the immediate administration and management of the great Works of Inland Communication, as affecting their productiveness as a source of revenue, and especially to a consideration of the future policy proper to be pursued with reference to those works in connection with the commercial interests and progress of the Province.

The reorganisation of the Department, under the Bill of last Session, necessarily entailed some derangements during its progress, but the chief requirements of the Law have already been carried into effect, with, it is to be hoped, but little inconvenience to the Public Service.

The general expenditure of the Department has also been the subject of careful examination, with the view of effecting such reductions as the state of the Finances called for, and the efficient performance of the service would permit.

It would however have been unwise, to have entered on any general system of reduction, without a full knowledge of the items in respect of which it could, with propriety, be applied, and to that end, an analytical statement of the expenditure has been prepared, distinguishing—1stly. Those items which are properly permanent charges on the Department, such as Staff, Superintendence, and Management;—2ndly Those which, though permanent, are liable to fluctuate in amount, such as maintenance, repairs and supplies for, or the renewal and extension of, existing works; and—3rdly Those, of which

the extent and outlay may be controlled from year to year, such as new works authorized by the Legislature or placed under contract.

The gross expenditure, during the past year, as will be seen from the following statement, has been \$929,231.09 or deducting the advance authorized by Parliament to place the Northern Railway in repair, and which is since repaid, \$869,231.09; while that of 1858 was \$1,071,014.38, shewing a reduction of \$201,783.29.

The following statement exhibits the various items of Expenditure under their respective heads :

1st. Permanent charge of Head Office and General Staff of Department, Superintendence and Management of various Works, including portion of charges currency incurred on construction account		- - - - -	\$182,925 38
2nd. Ordinary Repairs of Works		- - - - -	88,646 33
3rd. Extraordinary Repairs, extension or enlargement of existing Works		- - - - -	75,751 39
4th. New permanent Works, such as Court Houses, Custom Houses, Roads, Light Houses, Harbours, &c., chargeable to construction account		-	349,404 41
5th. Old claims for damages, and those arising out of Contracts existing against Department, settled during the year		- - - - -	81,146 67
6th. Tug and Trinity House Service, and Postal extension, Lower Provinces		- - - - -	67,483 79
7th. Removal to Quebec		- - - - -	23,873 12
8th. Northern Railway (Legislative advance to). Since repaid		- -	60,000 00
			<hr/>
			\$929,231 09

Attention has also been directed to the position of various remote works, such as Timber Slides, Dams, Booms, &c., originally constructed for the public convenience, but which might now more properly be handed over to the Local Municipalities or disposed of to Private Companies. The cost of management and repairs, and the frequent demand for further large outlay in the way of extension or maintenance of these works, without any commensurate Public advantage, render the same policy advisable in regard to them as has already been pursued with respect to Roads and Bridges in various sections of the Province

But while it is believed that by these and other means which will be steadily followed, a considerable reduction in expenditure may be effected, the question of present administration is subordinate in importance to the adoption of a sound Policy which should hereafter be pursued in reference to the more important works of Inland communication, so that they may in some greater degree fulfil the National objects for which they were undertaken. It is of most serious concern, to ascertain the true causes to which the continued falling off in the revenue of these great Public Works may be attributable, and to consider the means by which they can be made, not only more productive in themselves, but more widely beneficial to the Province, by securing that share of the great and ever-increasing commerce of the West to which its position entitles it. The great facilities of transport, which the combined system of Water and Railway communication in Canada affords, have produced increased activity on the part of those interested in Foreign routes,

to retain the carrying trade they have hitherto engrossed, and continued efforts on our part will be required to develop to their utmost extent the natural advantages which Canada possesses, and keep pace with the requirements of the day. The necessities of Trade, and its active competition, demand the most direct and cheapest routes, and all minor considerations will ultimately give way to these great requisites of successful commerce. And with reference especially to grain, the great article of transport, being both bulky in its nature, and low in value in the Districts surrounding the great Lakes where it is produced, cheapness of Transport is peculiarly important, and is becoming yearly more so, as the regions of production get more and more remote from the place of consumption. The geographical position of Canada, and the means she possesses of providing to the interior of the Continent a combined system of water and railway communication unrivalled in the world for extent and safety, must, it is believed, eventually give her the command of the Trade, if the right means are taken to secure it. The effort becomes the more pressing, inasmuch as during the interval of nearly ten years, which elapsed between the completion of the existing water communications throughout Canada, and of the Railway system, which has only within the last few months attained accomplishment, the Carrying Trade has been nearly entirely absorbed by Foreign routes—a deprivation, which, if suffered to continue, will be deeply injurious, not only to the revenue of the Public Works, but to the many new and important Enterprises which have meanwhile come into being, and whose success so intimately concerns the general prosperity of the Province.

Every year during which the diversion of this Trade continues, adds to the difficulty of regaining it, the more so, as the influence of the great commercial centre of the United States, the City of New York, from which a large share has to be wrested, permeates to the remotest regions of production. And it is not to be forgotten, that in addition to this influence, Canada has to contend with the immediate rivalry of the State of New York itself, whose direct pecuniary interest in the success of the rival routes is not secondary to that which Canada possesses in the prosperity of its own.

In seeking for the causes to which the diminished revenue on the Public Works already adverted to, is due, the fact that so many other new means of Transport through the Province exist, has not been overlooked. Some idea may be formed of the extent to which the Railways have attracted the down trade to themselves, by reference to the following returns of freight carried Eastward by them during the last year. These returns having been obtained from the proper officers of the various lines, may be regarded as reliable.

The Welland Railway carried (chiefly grain) - - - - - 14,713 Tons.

The Great Western do. do :—

Through freight to Suspension Bridge - - - - - 22,700

do. to Toronto 8,717 and Buffalo 2,984 - - - - - 11,701 34,401 do.

The Northern Railway to Toronto through - - - - - 24,897 Tons.

The Grand Trunk :

Through and local to Montreal - - - - - 55,763

Of which was carried by Northern R. R. }

and delivered to Grand Trunk at Toronto, } 12,778

already entered above - - - - - 42,985 do.

Grand Trunk, brought to and passing Montreal } not included in the foregoing }	23,913 Tons.
Buffalo and Lake Huron Railway, to Buffalo } Foreign, 4500 tons and Local, 51,800. - - - }	56,800 do.
<hr/>	
Total Tonnage of Freight eastwards carried } by Rail - - - - - }	197,209 do.

Yet this diversion from our Canals to our Railways is subordinate to the consideration, that taking the aggregate amount of produce carried on all, and keeping in mind the marvellous increase in the Western Trade, the share which Canadian channels now command is entirely disproportionate to the advantages which our geographical position and great Works present. It is true that a large falling off has taken place in the revenue of the New York Canals from the year 1851 downwards—the Tolls being \$3,703,999.00 in 1851, and only \$1,812,280.00 in 1859; yet this is due in a great degree to the lowering of the Tolls, for the Tonnage has remained the same, while the Tonnage of all the Railways, notwithstanding the protective legislation in favour of the Canals, and the restrictions in regard to the transport of freight at certain seasons of the year, has largely increased.

The falling off last year on the New York Canals, making due allowance for the relative reduction of rates on them and on our own, is by no means in the same proportion as that on the Canadian Canals.

But in view of the efforts which are now being made by the Province to demonstrate practically the manifold advantages which the St. Lawrence Route, whether by rail or water, possesses over all others, as the most direct channel of communication, not only between the West and North-West States of America, and Europe, but between those States and the Eastern States of the Union, it becomes matter for special investigation whether the circumstances, which fixed the scale of navigation at its present limits, have not so far changed as to demand an enlargement of the Works, not only on the ground of rendering the enterprises themselves productive, but as a measure necessary to secure that trade, of which they would be the natural outlet;—and how far, also, it may be expedient to provide new avenues of communication, especially with the Eastern States.

The undersigned would not recommend that any Policy, involving a certain and large expenditure, should be entered upon precipitately, nor without the fullest examination and enquiry into the propriety of its adoption, by a minute investigation into the present course of Trade, and an intelligent appreciation of its future tendency. It ought to be shewn that so far as human foresight can anticipate, the result will not issue in merely adding to the existing burdens on the public, but that it will secure a fair return either in the shape of direct revenue from the works, or by an expansion of the Commerce of the Province.

It is undoubted that a very large share not only of the Western Foreign Trade in Grain, but of the Canadian, finds its way to the Sea Board and the Eastern States through American channels. It is equally certain, that the best and cheapest channel of general commerce as regards transportation, is natural navigation, such as by Sea, Lake or River,

in contradistinction to the artificial navigation by Canals—the latter requiring a heavy outlay for working, superintendence and repairs—in addition to the original cost of construction, and imposing a corresponding charge for their use. On the transport of bulky articles, the larger the vessel, and the longer the voyage, the more cheaply in proportion to the distance will the freight be carried. Now, it is equally undeniable that Canada possesses, through her natural navigation—which, (with the exception of 69 miles of Canal) embraces the entire distance from Chicago to the Ocean, the means of supplying these advantages in a degree which the United States, on account of their geographical position, cannot attain.

And yet the arrivals of Grain at the two ports of Buffalo and Oswego alone, have during the last 5 years averaged 1,313,277 barrels of flour and 27,527,088 bushels of grain, while the average shipments from Canadian Ports Seaward have been but 205,821 barrels and 972,625 bushels.

The shipments from Toronto alone, from the 1st September to the 31st December 1859, were—

Flour, barrels	- - - - -	63,627
Wheat, bushels	- - - - -	805,224
Barley, “	- - - - -	167,364

Of which the Ports of Montreal and Quebec received but 19,715 barrels and 21,691 bushels of wheat, or about 2 per cent. only of the latter, the remainder finding its way to Oswego and other American Ports on Lake Ontario.

The entire shipments by sea from Canada last year, were only 140,235 barrels of Flour, 58,029 bushels of Wheat, and 439,328 bushels of other Grain.

There are, doubtless, the considerations, which have already been adverted to, that temporarily at least aid in bringing about this unsatisfactory result. The removal, in past years, of the Tolls from the New York Railways, and the intense competition existing among those Railways for the Western Trade, caused such a reduction in the rates of Transport, that the Canals of that State had, in order to secure a share of the traffic, to lower their dues to an extent which nearly annihilated Revenue, and apparently led to the result of making the debt incurred for the construction of the Canals, a charge on the general Treasury of the State.

The Legislature of the State of New York has now under consideration several propositions, which may have an important bearing on the future course of Trade, and will consequently claim the serious attention of the Province. Every change affecting the course of Trade in the neighbouring States, must be narrowly considered in determining our own.

It has been contended, that because the Ports of Canada are closed for five months in the year, the St. Lawrence can never, no matter how perfect the Province may render its works of internal communication, attract that extensive and varied commerce from all parts of the world, which is necessary to secure cheap and certain freight at all times to Europe; that this suspension of five months operates such a drawback as to neutralise the superior advantages we possess to bring produce to tide water, inasmuch as the higher rates of Ocean freight counterbalance the cheaper Inland transport, and moreover, that the want of cargoes

Westward must always keep the rates of ocean freight from the St. Lawrence higher than from New York and Boston, inasmuch as to the latter ports, cargoes of some kind can always be relied on, while to the St. Lawrence any greater number of vessels than the Import trade can profitably employ, must lose the voyage Westward and come in ballast ; that in short the Export tonnage must keep pace with the Inward, and that no great commercial centre can grow up where the operations of trade are subject to alternate suspension and renewal, as those of Canada must always be.

These objections, whatever may have been their force at one time, are now removed. Until the construction of our Railways,—when the grain exporter was dependent on the tonnage supplied by the spring and fall fleet of the St. Lawrence,—at one time so limited and controlled by a few owners, and departing only at certain seasons of the year, when operations of every kind were suspended in winter, and all foreign markets were then inaccessible, that constancy and regularity which are essential to the growth of commerce were not attainable.

Our Ocean Steamers, sailing to and from the St. Lawrence in Summer, and Portland in Winter, now furnish a weekly line of communication with Europe, throughout the whole year, which, whether as regards expedition or economy, is unrivalled. The establishment and successful operation of those Steamers has effectually removed the objections once so forcibly urged against Canada and the St. Lawrence route, on the ground of interrupted intercourse through a protracted Winter ; inasmuch as the completion of the Victoria Bridge, and the unbroken communication by rail thus opened between Portland and all parts of the Western Continent, has supplied that continuous and reliable means of communication with Europe, the previous want of which had interposed a most serious bar to the expansion of our commerce, and the productiveness of our Public Works. The facilities of communication between the sea-board and the producing regions of the West, thus presented by the Canadian route, are not by any means enjoyed to the same extent by either of the great commercial cities of Boston and New York. As regards the latter, the channels of internal water communication are closed quite as many months in the year as those of Canada, and when open, are far more restricted, devious and expensive, while Boston possesses none, but is dependent on Railway transport during the entire year.

In estimating the value of our inland communications, whether by rail or water, we cannot overlook the important use to which they may be turned in promoting a more direct intercourse between the producing regions of the West, the great granaries of America, and the Eastern States, regarded in the light of consumers. It has been stated on reliable authority, that of cereals, five barrels are consumed per every three that are exported. The supply of such a demand in itself involves a large carrying business, in which we may fairly expect to participate through the advantages which our channels of communications already possess, and which may yet be increased by further reducing the cost of transport and transshipment, by affording additional facilities for the storing of produce.

The cost of unloading, storing for one month, and reshipping, now amounts to 3 cents per bushel, while by means of proper Elevators and the modern appliances of machinery, the cost can be reduced to less than one cent. These improvements can be best undertaken by private enterprise, but the use of surplus water for the driving of machinery, and the lease at reduced rents of suitable ground, where it can be granted without detriment to

the Public Works, may with advantage be afforded to individuals willing to embark the requisite capital in such undertakings. It is gratifying to be able to state, that already some large Buildings and Storehouses have been completed, and that arrangements for the immediate erection of others on a still more extensive scale are in progress. This is a most important requisite to ensure cheapness of transport; for, unless we furnish the same means for receiving and delivering produce cheaply at our own Inland Ports as American ports supply, we cannot command the trade.

The opportunity of storing produce, in cases when the immediate conveyance to market is not readily practicable, enables the producer or shipper to anticipate in a great degree the realization of his property, on the security of bills of lading and warehouse receipts.

It is satisfactory to observe that this important consideration has not been lost sight of by the Grand Trunk Railway. In a recent report from the Managing Director to the Shareholders, the following statement is made:—

“As regards the Traffic from the West, we have long been made aware of the fact, that if the same monetary facilities were not afforded Western Shippers of Produce to the New York and Boston Markets, or intermediate Ports, such as Buffalo or Oswego, as were granted them at present by parallel lines, we could never expect these Shipments viâ Canada, and therefore it is with much satisfaction that I am able to state that arrangements are in course of completion for making advances on shipments to Toronto, Kingston, Montreal, Quebec, or Portland, on depositing at the place of shipment the bills of lading with accredited Agents. The importance of this arrangement cannot be over-estimated, as we are now at every point well qualified to compete successfully with these parallel lines for this Western Traffic, and under similar arrangements, we shall be able to transport from other districts of the Mississippi, their produce for manufacture in the New England States, and also that for export to Europe.”

The extension of these facilities cannot fail to attract the Western Trade to our inland route, and in a great degree to counterbalance the influence which the position of New York, as the great central point of commerce, has hitherto exerted, in drawing this traffic to itself.

In what respect any of the Chain of Great Works requires improvement, is now matter for anxious enquiry.

The first in the series of works is the Welland Canal. If its size be not sufficient to pass the vessels now plying on the Great Lakes which it connects, and which vessels would, but for its inadequate size, make use of it, it is manifest that the very object for which it was constructed, is defeated.

Particular enquiry has been instituted regarding the size and number of the vessels engaged in the Grain Trade on the Lakes, and it would appear from the returns obtained from various independent and reliable sources, that from one-third to one-fourth of these vessels cannot pass through the Welland Canal, while nearly three-fourths of the Propellers on the Upper Lakes—being the class of vessels now chiefly used in the Grain Trade—are too large to pass into Lake Ontario.

The undersigned abstains from offering an opinion how far the falling off in Trade by this Canal, is attributable to the opening of new Channels of commu-

nication from the Upper Lakes, and to the commercial facilities afforded to attract it elsewhere, as these considerations may be deemed fit subjects for Parliamentary enquiry. But should it be conclusively shewn, that the predominating cause, of the diminution of its trade, is the fact, that the size of its Locks is not adapted to the class of vessels now in use on the Upper Lakes, the enlargement of the Welland Canal would seem now to be as much a matter of necessity as was its construction in the first instance.

It will not be out of place to mention one fact, the bearing of which on this question is not unimportant, that reliable sources give a return of only 14,800,000 bushels of grain as shipped Eastward from the Lake Regions over Lake Ontario, in 1859, against 21,800,000 in 1858, 18,044,000 in 1857, and 23,800,000 in 1856.

Special attention is directed to the facts stated, as well under the particular head of the Welland Canal, as those contained in the correspondence in the Appendix.

The same policy that affects the enlargement of the Welland Canal, equally concerns the St. Lawrence Canals. The attention of the Chief Engineer was called to the question of the probable cost of improving the latter, and from his very satisfactory and clear Report, which will be found in the Appendix, it is gratifying to find the cost of deepening to be within a reasonable compass.

The deepening of these Canals, so as to give them at least the same depth of water as the Welland, is a work which ought not to be delayed, whatever policy may be pursued with reference to the enlargement of the whole chain.

It is a very significant fact, that the State of New York is steadily pursuing the policy of enlarging her Canals, notwithstanding that the burden imposed on the General Revenue to meet the charges upon them, is yearly increasing, and that the deficiency of the past year has to be supplied by Loans or Taxes to an amount exceeding \$3,500,000.

The project of constructing a Canal to connect the St. Lawrence with Lake Champlain, has frequently been urged by parties who have for many years given attention to the subject of Transport, as requisite to complete the chain of Canals now in use, and as especially necessary to draw through the St. Lawrence, the large amount of Western Produce which is consumed in the manufacturing States of New England, a consumption which has been variously estimated at from 5,000,000 to 9,000,000 barrels a year. It has also been contended, that the Lumber Trade of Upper Canada and of the Ottawa would thus find an easier and cheaper conveyance to the markets of the United States, and that the large upward freight of heavy goods for supplying the populous Western States, of which we have now little or none, would be attracted through the St. Lawrence and Welland Canals.

The arguments affecting this important project have been so often brought under public notice, both by this Department and by the Legislature, that it is needless to advert to them again in detail, but the considerations already pointed to, which commend to us the expediency of ascertaining the effect of Canadian Railways, before entering on any large expenditure for new Works of Inland navigation, are equally applicable with reference to this. The Victoria Bridge has already remedied one great objection which formerly existed—the breaking of bulk on crossing the St. Lawrence. But as bulk

must be broken somewhere on produce coming by water from the West, before its distribution among the manufacturing cities of the Eastern States can take place—the problem, whether with our new Railway facilities, that point may not be on the St. Lawrence, is one which we are now about to solve by the test of actual experience.

In the course of his investigations as to the causes to which the fact of the inadequate share of the trade passing through Canadian channels was due, the undersigned had occasion to address various official persons and public bodies, both in Canada and the United States, by all of whom statistical information of much value has been afforded.

Too much importance, however, must not be attached to statistical returns. They may show what the course of trade actually is, but we have to look deeper into the causes of its tendency thither. Legislation,—undue competition for the Traffic,—Banking assistance for the speedy realization of shipments,—the existing connexions of business, and many other inducements, have their influence, and will often outweigh the superior advantages offered by one channel over another.

The project of uniting the waters of the Western Lakes with the St. Lawrence by means of a Canal from Lake Huron, through the valley of the Ottawa, has not been overlooked. A minute and accurate survey has been completed, and the result, as respects the estimated cost of construction—the comparative advantages and difficulties of the routes—the amount of lockage and the extent of Navigation by Canal, River and Lake respectively,—will be found under the appropriate head.

The navigation, as well of the Inland waters from Lake Superior downwards, as of the River and Gulph of St. Lawrence, have become so important, both as respects safety and expedition, that special attention has been called to the necessity of providing an additional number of Lighthouses both on the Inland Lakes and on the Lower St. Lawrence, and also of distinguishing Beacons on the coast of the latter. Communications were addressed to the United States Lighthouse Board, and to the Commissioners of the Scottish Northern Lighthouses, on the subject of using Iron in the construction of the buildings—by both of whom much valuable information was most courteously furnished.

The Report of the Chief Engineer, to whom these communications were referred, will be found in its proper place. This Report contains much reliable and valuable information. The undersigned would strongly urge the immediate construction, during the present season, of Lights at Cape Whittle and the Bird Rocks, as indispensable to safe navigation.

In connection with this subject, and as a means of still further shortening the route by Canada to the West, it is recommended that measures be taken to ascertain, whether the Gulf of St. Lawrence may not be navigated with safety for a longer period than it now is, and whether a Harbor may not be found accessible during the whole year to Canadian territory. It is believed that the ice in the Gulf during a great part of the winter, offers less obstruction to the navigation, than during the late Autumn and early Spring. An experimental voyage of a steamer in winter, which might be accomplished at a moderate expense, would solve this question, which is one of some importance to the Province.

In reference to the numerous Works which have ordinarily been classed as unproductive (enumerated in Statement No. 3, Schedule A,) the gross cost of which amounts to a considerable sum, it is to be kept in mind, that many of these Works consist of buildings occupied by the various Departments of the Public Service, and which will meet their require-

ments for many years to come. They cannot be considered as unproductive while they are occupied in the Public Service, for they are worth, in effect, the annual rental to the Province, and operate to diminish each year, by so much, the charges on the Revenue.

The rapid growth of the Province, both in respect of population and the progress of its material and social interests, demanded that the wants for which the outlay on these heads was incurred, should be promptly met. It will be seen that they comprehend, when completed, at a small additional outlay, much that will suffice for the future necessities for many years, in regard—

1st. To the Administration of Justice.

2nd. The Hospitals, and the safe custody and proper provision for Lunatics

3rd. For Educational Requirements.

4th. For Postal Requirements.

5th. The Collection of the Revenue.

6th. The Lighthouses and Lightships.

7th. The Roads on the main lines throughout the Province.

With reference to the Public Buildings in charge of this Department, the Report of the Assistant Engineer, and Architect, detailing their condition, and the expenditure upon them, will be found in Appendix B.

It will be seen from the Schedules which accompany this Report, that the gross Revenue from the various Public Works during the past year has been \$287,183.20, while the cost of management and ordinary repairs—allowing one-half the annual charge of the Head Office chargeable to that Branch of the Service—and including all items not properly chargeable to construction, has been \$162,876.35.

THE FOLLOWING STATEMENTS ARE APPENDED TO THIS REPORT.

No. 1. Statement of the several Public Works under the charge of this Department, which are in use and yield revenue; showing the expenditure under the different heads during the year 1859, viz.: on Construction; the amount paid for Land Damages; and the total cost of construction *under this Department* to the 1st January, 1860. Also, the gross revenue therefrom during the year 1859, the cost of collecting the same, together with the cost of repairs and management for the same period, and the net revenue or deficit.

No. 2. Statement of the Public Works under the charge of this Department, incomplete, and as yet unproductive, but on which tolls are to be levied as soon as they are available,—showing the expenditure thereon in 1859, on Construction, on Repairs and Management, and the total expenditure up to 1st January, 1860.

No. 3. Statement of the several Public Works and Buildings in course of construction under the charge of this Department, yielding no direct revenue, but in use for the public service, and authorized by legislative appropriations, shewing the amount expended thereon during the year 1859, and the total outlay upon them up to the 1st January, 1860. Also, the amount expended in repairs and maintenance for the same period.

No. 4. Statement of expenditure on certain miscellaneous services under this Department *during the year 1859.*

No. 5. Statement of the expenditure incurred under this Department, for Repairs and Management of the Ordnance Canals, for the year 1859, and the revenue therefrom for the same period.

No. 6. A Detailed Statement of the expenditure incurred in Repairs and Maintenance of the Provincial Light Houses, for the year 1859, under this Department.

No. 7. Statement showing the total amount expended under the Department of Public Works during the year 1859, as detailed in the foregoing statements, numbered 1, 2, 3, 4, 5 and 6.

PROVINCIAL CANALS.

WELLAND CANAL.

The Navigation.

This Canal was opened on the first of April, and vessels were passing through it on that day. It was closed by frost on the eighth of December, making 252 days of navigation, including interruptions.

The Interruptions.

These were of a more serious nature than usual, and were caused entirely by vessels breaking Lock Gates. The navigation was twice interrupted from this cause. A vessel broke the Gates of Lock No. 7, on the 30th April, and stopped the traffic for three days. Again, on the 16th of June, the "*Quebec*," of Kingston, carried away the Gates of Lock 25, at the top of the Thorold level, and the water pouring through, produced many serious breaches in the banks along the side of the mountain. The repairs, in this instance, cost \$5953.00, and the navigation was interrupted for eight days.

To guard against such serious accidents in future, it is proposed to construct a pair of guard gates in the cutting, a short distance above the 25th Lock, which is estimated to cost \$20,500, and is chargeable to construction.

The storms of March and November, did considerable damage to the piers at Ports Colborne and Maitland. The injuries caused by the first storm have been repaired, but those produced by the latter have yet to be made good. It is intended to raise the Piers, in order to diminish the chance of similar accidents in future. The Repairs are estimated at \$5,500, and the Raising, \$7,000; the latter being chargeable to construction.

Repairs and Management.

The total expenditure for repairs and maintenance for the past year, is \$37,524.87, and of this sum, \$17,791.24 was spent in making good the damage occasioned by the breaking of gates, by storms, and by floods.

The cost of management and lighting with oil and gas for the year, is \$40,988.89.

These expenses are considerably less than those of 1858, as shown by the following statement:—

	In 1858.	In 1859.
The cost of Repairs was.....	\$61,960.40	\$37,584.27
The cost of management.....	42,559.23	40,988.89
Repairs and Management.....	\$104,519.63	\$78,573.16

This statement is given in proof that every effort has been made to keep down expenditure, while, at the same time, the main object has been to maintain the canal in efficient working order—a portion of the expenditure for the last year, being for spare gates, not casualties, as well as for raising and protecting the banks to admit the passage of *hawing 10 feet water.*

Works of Construction.

In accordance with the recognised policy of making Lake Erie the future summit level of this canal, the necessity for which is becoming every year more apparent, four steam excavators, used as dredges, have been constantly at work during the past year upon the Allanburg, or summit level, enlarging and deepening the canal to the assumed dimensions of 46 feet bottom, and 11 feet draught of water at the lowest stages of the lake. Six miles out of the 12½ miles originally authorised and required to be done, are now completed to these dimensions. The amount expended on this work during the past year, is \$42,650. The sum required to be appropriated this year for carrying it on, is \$60,000; in addition to which, \$20,500 is required for the construction of a pair of Guard Gates at Thorold, and \$7,000 for Raising the Piers at Ports Colborne and Maitland, before referred to, making in all, \$87,500, chargeable to construction, and necessary for the protection and preservation of the canal, and for carrying on the enlargement of the summit level now under contract.

In the Superintendent's Report (C) which follows this, is contained, in Schedule 1, a detailed statement of the several works (including the foregoing) which he has recommended, and on which appropriations have been made in 1854, 1858, and 1859.

The total estimated cost of these is..... £204,562

The amount appropriated for them is..... 76715

Leaving a balance still required for their completion..... £127,847

The undersigned is of opinion that these works are necessary for the completion of the canal as a Provincial work, and that the balance of the estimate should be provided for when the finances will admit of it; but considers it essential, that at least the sum of £21,875 should be appropriated for the more urgent works above mentioned.

The Revenue from Tolls.

The undersigned regrets having to report a falling off of revenue, which is partly accounted for by the reduction of the tolls authorised in June, 1859. That reduction amounted to about 30 per cent., but the receipts from tolls this last year, are 40 per cent. under those of 1858, and are even less than those of 1849, ten years back.

The Receipts from tolls for the last 15 years have been :—

1845.....£19086	1853.....£65002
1846..... 26524	1854..... 50691
1847..... 30135	1855..... 54429
1848..... 28076	1856..... 65392
1849..... 34573	1857..... 58109
1850..... 37925	1858..... 51942
1851..... 50460	1859..... 31086
1852..... 58273	

There was a gradual increase up to 1856, and then a rapid decline. There is no doubt that the monetary derangements of 1857, the short crop of 1858, and the general commercial depression they produced, have tended naturally to this result ; while the opening up and extending lines of railway from the Atlantic seaboard to the interior, the construction of new ones, and the keen competition existing amongst them, must divert a large share of traffic from the Canal.

The effect which these disturbing causes have produced upon the traffic of the Welland Canal, is seen in the number of vessels which passed through it in 1859, and their tonnage, as compared with the three previous years:—

The number & Tonnage of Vessels pass- ing.	In 1856.		In 1857.		In 1858.		In 1859.	
	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Upwards & Downwards.	3359	594266	3167	582285	2856	582406	2223	418922
	3407	584980	3076	566149	2844	566365	2336	636917
Totals...	6766	1179246	6243	1148434	5700	1148771	4559	1055839
Average per Vessel.	176 tons.		184 tons.		201 tons.		232 tons.	

From which it will be observed, that, while the number of vessels passing through the canal has been decreasing, there has been a gradual increase in their tonnage capacity ; the result being, nevertheless, a decrease in tonnage of about ten per cent., which, added to the reduction in the rates of toll, made in 1859, would appear to account, in some degree, for the falling off of the revenue from this source.

It being a matter of serious interest to ascertain, as nearly as possible, what effect the opening of the Welland Railway, constructed alongside the canal, has had upon the trade of this Canal, the Superintendent was called upon for a report on the question, and his Report is given in the Appendix (D). From this, it would appear that it has, in reality, as yet diverted but a small share of the traffic, and that its principal business has, in fact, been *created*. Banking facilities afforded to shippers by that line, have, it is stated, brought business to it, which, otherwise, would have found its way to market by American routes ; and vessels have given it their cargoes, at Port Colborne, which, by their dimensions, are entirely excluded from the Canal.

The business done upon this railway, amounted to 14,713 tons, carried in 37 vessels, four of which could not pass the canal. The tolls on that tonnage would have yielded \$2,896 to the canal, and the vessels \$480, had they passed through ;—of this, 3,890 tons were shipped to British, and 10,823 tons to American Ports.

And yet, as regards this traffic, that which may be considered as legitimately belonging to the canal, would not exceed 4,208 tons, and the tolls on it would not have amounted to \$41.60. The remainder has been created, or added, by the railway.

But the fact which is to be regarded with the greatest interest, as affecting the course of trade, is the increase on the number and tonnage of that large class of propellers, which cannot pass through the Welland Canal on account of their size.

The Superintendent, at the request of this Department, has procured a list of all the steamers and vessels, British and American, now afloat on the Inland Lakes.

This fleet consists of

132 Steamers, of.....	67,079 tons,
197 Propellers.....	67,073 “
1007 Schooners.....	205,884 “
93 Brigs	26,992 “
59 Barques	22,924 “
4 Sloops.	244 “

Total tonnage,..... 390,187 tons.

The largest vessel that can pass through the Welland Canal, is the “*Alexander*” of Port Dalhousie, 423 tons;—but there are very few of the large traders passing this canal that exceed 400 tons burden.

The number of vessels too large to pass the canal, and the class and tonnage of the same, are as follows:

65 Propellers, varying from 442 to 1223 tons burden, and averaging 641 tons.....	41,654 tons.
59 Steamers, from 402 to 2026 tons and averaging 537 tons.....	81,724 “
15 Schooners, from 432 to 969 tons and averaging 531 tons	7,463 “
16 Barques, from 430 to 765 tons and averaging 498 tons.	7,975 “
5 Brigs, from 434 to 547 tons and averaging 559 tons.	2,797 “

Total tonnage,..... 91,613

The tonnage of the vessels capable of passing through the Welland Canal, is 298,594, while that excluded from it by the size of the vessels is 91,613 tons, or nearly 23 per cent. of the whole. Experience has proved, and it is now pretty well understood, that the cheapest and most expeditious means of carrying freight is by the large class of propellers, from 600 to 1000 tons burden,—a class entirely too large to pass the canal, and which is increasing in number every year, and is exclusively engaged in directing the course of trade on the upper lakes, to Buffalo and Dunkirk, to supply the Erie Canal, the New York Central, and the New York and Erie Railways.

It is therefore, as before observed, a question for serious and immediate enquiry, whether the advantage which the Welland Canal possesses by its commanding geographical position between the great lakes, is not in a great measure neutralized by its want of capacity, and whether the necessity for its enlargement to meet the improvements made in freight vessels and its construction, has not become apparent. The question of enlarging all the canals, is adverted to in a subsequent part of this Report.

Revenue from Water Rents and Leases.

A good deal of difficulty has been experienced in collecting the water rents due to the government for many years past. Stringent measures have been resorted to, in order to enforce payment, and the Superintendent has succeeded in reducing the balance outstanding, from \$9,558.82, due at the end of 1858, to \$7633.99 in 1859. The annual rent is \$8,021.08, and the amount collected in 1859 was, \$10,545.91. The gross revenue for 1859, is :

From tolls.....	\$124,145.78
Water rents and leases.....	10,545.91
Fines and damages.....	4,176.82
Land sales... ..	200.00
<hr/>	
Total.....	\$139,068.51

THE WILLIAMSBURG CANALS.

The Navigation.

The Galops, Point Iroquois and Junction Canals now form one continuous canal of 7½ miles in length. This canal, the Rapid Plat, and Farran's Point Canals are all called the Williamsburg Canals, and are under the superintendence of Mr. Isaac Rose, who resides at Williamsburg.

These canals were opened on the 30th April, and closed by frost on the 5th December; making 219 days of navigation in 1859. There was no accident or interruption to the traffic, and no vessel was delayed during the whole season. The canals have been maintained in good order.

The water on the St. Lawrence having continued to rise last year above the high water of 1858, so much so as to overflow the towing path in many places, it was found necessary to raise these parts of the bank from 12 to 18 inches, and protect them with stone. And to check the inroads made by the current and wash of the high water, many parts of the bank have been lined with stones, forming a rip-rap wall inside and out.

The wharves referred to in the last year's Report as being in a bad state, have been put in thorough repair, and a contract has been entered into with Messrs. Kilduff and O'Neil of Kingston, for the construction during this winter of four pairs of spare gates for the Williamsburg, and three pairs for the Beauharnois Canal. The materials have been provided and the work is now in progress at Williamsburg. They are to be in readiness by the opening of the navigation in spring.

CORNWALL CANAL.

This Canal was opened on the 20th April, and closed on the 7th December, making 231 days of navigation, which continued without accident or interruption throughout the season.

The works, generally, have been maintained in good order throughout the season, with comparatively little outlay, and are now, with some slight exceptions, in a good state of repair.

The wharf at the lower entrance is so much decayed, as to require that the superstructure, for a length of 277 feet, should be rebuilt.

The upper part of the wharf at Dickinson's Landing is also much decayed, and some of the cribs on which it rests have been displaced. The expediency of maintaining this wharf is questionable, because, although of essential service at the time of its construction, it is now but seldom used.

As there are but three pairs of spare gates on hand—that is to say, an entire set adapted to either of the lift locks, and one pair for the guard lock—it will be necessary, in case of accident, to provide another pair for the guard lock and a pair for the lower gates of the other locks.

Arrangements have been made for providing stones, during the present winter, for the protection of the embankment at the upper entrance, and of the banks between locks 18 and 19.

The chamber walls of the guard lock, referred to in last year's report, as well as the 'Queen's Wharf,' at the upper entrance, have been re-built. The head gates for supplying water power on the north side of the Canal, between locks 17 and 18, at the town of Cornwall, have been constructed, and will be ready for use so soon as the coffer dams can be removed. The lessee has completed the tail race which is required to bring this power into operation.

The head gates to the mills on the south side of the Canal, on this level, were built by the lessees in a temporary manner, on the conditions, expressed in their leases, that they should maintain them in good order. These are now in such bad condition as to endanger the navigation, and the parties have therefore been called upon to re-build them.

BEAUHARNOIS CANAL.

This Canal was opened on the 19th April, and closed on the 29th November, making 225 days of navigation. The traffic was interrupted for two days by the Steamer "*Whitby*" breaking the gates of lock No. 9, on the 28th of November, but the repairs were made without delay, and the passage of vessels resumed, before the frost closed the Canal.

The works have been maintained in good order, at a moderate outlay, and the full draught of 9 feet preserved throughout the season.

As before mentioned, three pairs of spare gates are in course of construction for this Canal, to be in readiness by the opening of the navigation.

Some trifling repairs are required to the Locks, Lock Houses, Bridges and Ferry Scows. Two of the latter will have to be re-built. The Banks, Slope Walls and Ditches demand a small expenditure to maintain them in good order, as well as the Dams at the head of the Canal, which must be raised and protected against the action of the water.

The cost of these repairs for this year is estimated at \$5,532.50.

The Repairs last year amounted to \$2,917.28.

The amount collected for Fines and Damages to the works during the year, is \$604.93, particulars of which are given in the Appendix (J).

The Superintendent has suggested certain new works as being necessary. First, a Store for the safe keeping of the Canal Property. Secondly, the re-building of the wharf at

Gross Point, and, *Thirdly*, the construction of a break-water to connect it with the shore. These works are estimated to cost \$4,714.

Water Rents and Leases.

The Superintendent has furnished a statement (Appendix K.) of Water Rents and Leases of wharves and other property on the line of this Canal, from which it will be observed, that with one exception all the lessees are in arrears. The annual rental amounts to \$1,257, and there is now due to the Government \$3,715.50. Measures will be taken to enforce the payment of these arrears with as little delay as possible.

Claims.

The Provincial Arbitrators, appointed under the Act 22 Vic., cap. 28, sec. 41 to 45, have investigated and made up their awards upon nearly all the outstanding claims put forward for damages arising out of the construction of the Dams at the head of the Beauharnois Canal.

The number of these claims which they have adjudicated, is 461. The amount claimed on them, was \$132,002.09—and the amount awarded is \$11,810.90.

The undersigned recommends that the amount of these awards be embraced in the Estimates of this year.

LACHINE CANAL.

This Canal was opened on the 21st April, and closed on the 30th November, making 224 days of navigation, which was maintained without interruption throughout the season except that at the 2nd lock, a new pair of gates had to be substituted for those in use which proved to be too weak, but the delay was confined to this end of the Canal, all above being free, and lasted only 24 hours.

The Canal has been maintained in an efficient state, and the river having continued high throughout the season, there has been no difficulty in keeping up the supply of water to the mills, but such is the increase of machinery, and the use of water, by the mills established on the line of the Canal, that it is very much to be feared, when the river falls again to its ordinary level, there will not be a sufficient supply of water to keep them all going, without admitting a current in the Canal that would become a serious impediment to the navigation. The enlargement of the Rock cut, so often alluded to in former Reports, as necessary, both for the benefit of the navigation and the employment of the machinery established on the line, is, therefore, a work which ought to be proceeded with at an early date.

A store house on this Canal is very much required for the protection of the Public property, and it is also necessary that houses should be built for the lock and bridge tenders, who have to be on duty at all hours. The cost of these houses is estimated at \$21,000.

A further sum of \$6,000 is necessary to complete the boom at the Lachine Basin, for the guide or supporting piers were constructed in 1857.

The Superintendent strongly urges the necessity of constructing new waste weirs at Locks 3 and 4, in lieu of the temporary expedient now in use, of making the walls of the old Locks to serve for regulating the water; but in view of the possibility of enlarging the present locks within a short period, and the changes which such enlargement may require in the position of the works, their construction will be postponed as long as it may be prudent to do so.

The repairs of a general nature, required during the year, are estimated at \$7,711.00.

They consist of the pointing of lock walls, repairs of lock-gates, fixed and swing bridges, waste weirs, wharves and booms, Canal banks and slope walls.

A statement of the fines and damages collected on this Canal during the past year, by order of the Superintendent, amounting to \$229.80, is given in the Appendix (J.)

Water Rents and Leases.

Full particulars are also given (Appendix K) in reference to the leases of water power, and other privileges on this Canal, yielding an annual revenue of \$11,548.00. For some years past certain of the Leasees fell in arrears in their payments, various reasons for non-payment being assigned, but in accordance with regulations issued regarding the water rents on all the Canals, payments will now be strictly enforced as they become due.

The amount collected in 1856, was \$17,009.

CHAMBLY CANAL.

The navigation on this Canal commenced on the 15th April, and continued without interruption until the 3rd December, 233 days.

The Superintendent has furnished a statement of the repairs made to Locks and Bridges during the past year, by the Lock and Bridge tenders, under the direction of the Local Superintendent, and also of what is intended to be done, before the opening of the navigation in spring, by the same means. The estimated cost of the repairs for this year is \$2,590.00.

The Canal has been maintained in good working order, and it is satisfactory to observe a steady increase of the traffic upon it. The Revenue has increased from \$11,263.22 in 1858 to \$16,019.32 in 1859. There is a marked improvement in the trade, and the number of steamers plying regularly between the Ottawa and Whitehall is steadily increasing. On the completion of the Champlain Canal, connecting Lake Champlain with the Hudson River, a new impulse will be given to the trade, and it is therefore important to preserve this Canal in an efficient state.

A by-wash is required at Wood's Creek, for the protection of the banks, as well as to prevent deposit in the Canal, the removal of which every year is an important item of expenditure. The estimated cost is \$4,000.

The amount collected for damage done to the Canal by vessels this year, is \$91.07. The amount collected, \$20. Rents due, \$980.50.—(See Appendices J. and K.)

SAINT OURS LOCK AND DAM.

This lock was in use from the 5th of April to the 3rd of December, and the navigation continued without interruption throughout the season of 243 days.

The works have been maintained in good order this year at a moderate outlay : but some repairs are now required both at the lock and dam. The old gates are not to be depended upon any longer ; and it is the intention to take them out, and put in new ones in the spring.

The dam has settled at both ends, and some of the apron cribs have sunk considerably. They must be raised to the proper level and protected with stones. The repairs on lock and dam for this year are estimated at \$3,075.

ST. ANNE'S LOCK AND DAM.

This Lock was in use from the 18th April to the 28th November, and the navigation was maintained without interruption 225 days. The lock gates have been in constant use for 19 years, ever since the first construction of this lock, and are still in good working order.

The dam above the lock is in a very decayed state, but can be maintained a few years longer. The one at the foot of the lock, however, must be re-built above water this year, and a new bridge is also required over the mill race. The repairs for this year are estimated at \$1,250.

A lock house and collector's office are very much needed. Estimated cost \$1,800.

It is satisfactory to observe a steady increase in traffic at this point. The revenue for 1859 is \$5,654.17, shewing an increase of \$746.76 over the previous year.

CARILLON AND GRENVILLE CANALS.

(ORDNANCE CANALS.)

These Canals were opened on the 29th April, and the navigation continued without interruption until the 28th November, 214 days.

In consequence of their being so remote from Ottawa, and inconvenient of access to the Superintendent of the Rideau Canal stationed in that city, the charge of these canals was for that reason transferred from him to Mr. Sippell, the Superintendent of the Lachine Canal, residing at Montreal, and a local foreman, Mr. Thompson, an experienced mechanic, was placed under him.

Mr. Sippell's report on these works is to the same effect as those previously received by this Department, shewing them to be indeed in a very bad condition. The location of these Canals, and the scale of navigation, are such as to render it inexpedient to incur any expenditure in their maintenance which can possibly be avoided ; and yet such is their dilapidated condition, that in order to keep the Canal open at all, it has become indispensable to incur an outlay under the authority of Council of \$5,025, in re-building the chamber wall first lock at Carillon. The wall has been taken down, and will be re-built in March next.

Materials have likewise been purchased for making other repairs under Mr. Thompson's direction, and a good deal has already been accomplished by him towards getting these Canals in better condition. The channel at the upper entrance of the Grenville Canal, which had become very shallow from many years' neglect, has been deepened by the operation of a dredge extemporized for the occasion, to a depth of $4\frac{1}{2}$ feet at low water.

It is proposed to continue this dredging in spring, and to remove the sand bars in other parts of the Canal, which, with the other necessary repairs to the Canal banks, lock gates, &c., are estimated for this year to cost \$2,546.00.

These Canals have heretofore been operated under the Ordnance Regulations, which are now abolished, and the Rules and Regulations in force on the Provincial Canals have been applied to them. The rates of toll on these, and the Rideau Canal also, call for revision, and a new scale will be established for the spring.

RIDEAU CANAL.

This Canal was opened on the 16th April and closed on the 23rd November, at Ottawa, and on the 30th November at Kingston, making 222 days of navigation.

An interruption occurred by the breaking of the dam at Smith's Falls, on the 8th May, which lasted seven days. The dam has been re-built on a better principle, and may now be considered permanent.

The Superintendent, in his annual report, has given a statement of the present condition of the works on this Canal, accompanied by an estimate of such repairs as he considers indispensable for maintaining it in working condition, amounting to \$6,053.43, and a further estimate of \$1,668.40, for other repairs which he reports are very much required. In all amounting to \$7,721.82.

It became necessary, during the last season, to make special provision in some instances for guarding against the failure of certain works, and a consequent stopping of the navigation. Contracts have been entered into, under the authority of Council, for re-building the breast wall and mitre-sill of the lock at Black Rapids, and a portion of the lower wing wall of Brewer's lower lock, and for renewing the lock gates. These works will be done early in spring.

This line of artificial navigation, 127 miles in length, with its 47 locks, its dams, waste-weirs and flood-gates, was handed over to this Department in such bad order, that the cost of repairs and maintenance have been, and must, for some years, until restored to better condition, continue to be, of more than an ordinary amount. It is a system of navigation which deals directly with every flood of the country through which it passes, and in order that it may be placed in safety beyond the reach of these disturbing causes, its mechanical structures and appliances for regulating the water should be constructed on the most approved principles, and the superintendence should be in every way efficient.

The question of reducing the establishment on this line, must therefore be approached with caution, and has, during the past year, engaged the anxious consideration of this Department; but in view of the character of this navigation, and the necessity for constant vigilance in its supervision, by experienced hands, in order to avert accidents, little reduc-

tion has yet been effected. The question, however, is now being gone into in all its details.

The revenue for the last year was only \$6,866.72, being a slight increase over 1858, and was derived chiefly from local traffic. The products of the forest furnish the largest share of tonnage. The Iron Mines are just beginning to create traffic, and the movement of Agricultural products is slightly increasing.

It is believed that the revenue might be increased by a judicious revision of the present rates of toll, which are very low and quite disproportioned to the facilities afforded; and a further addition might be made to it by utilizing the water power, now unproductive, on many parts of the Canal.

With this view, a survey has been directed, and it is expected a plan will shortly be matured, by which the surplus water of the Canal, with land appropriate for its use, may be disposed of by public competition. In this way, business will be created, the settlement of the country promoted, and the traffic increased.

If, on full consideration, it is found practicable to carry the proposed reductions in the working into effect with safety; and should the increase of tolls produce the anticipated result, the undersigned entertains the hope that, with the additional revenue from water rents, the deficiency will in great measure be made good.

OTTAWA WORKS

The several works on the Ottawa, and its territories, constructed to facilitate the descent of lumber, and placed in charge of Mr. Horace Merrill, are reported by him (Appendix E,) to be generally in good order, and their operation during the past year, satisfactory.

The repairs necessary for their maintenance, to make good the wear and tear of the running season, were commenced at the period of low water, last fall, when they could be effected to the best advantage, and are now well advanced towards completion. Some repairs in the Madawaska and Gatineau Rivers, which had to be postponed until winter, are in progress, and will be completed in due time.

The dams, and crib channel, at the Carillon rapids, commenced in 1857, have been completed this year, and the heaviest timber can now be passed at low water, and with fewer hands than in former years.

Two other improvements of importance, referred to in the report of last year, have been undertaken.

The *first* is the raising of the dam, at the High Falls, on the Madawaska, by which the dangerous portion of the current at the Ragged Chute, has been drowned out and destroyed, and a large space for boomage created.

The *second*, the renewal of the works on the South Branch of the Pettewawa, constructed by private enterprise, some sixteen years ago. These are now under contract, the work in progress, and will be completed and ready for business in the spring.

For these improvements, it is understood, a toll is to be collected, sufficient for their maintenance and renewal, as well as to meet the cost of management, and interest on outlay.

Another improvement has been prayed for, on the same terms, by the lumbermen, *which consists in the establishment of a retaining boom at the Cheneaux Rapids, on the*

Ottawa River. The lumbermen of the Upper Ottawa are deeply interested in this improvement, as, on that reach of the River, which includes the Calumet, Mountain, and Portage du Fort Rapids, a great quantity of timber is annually scattered, carried over the Chenaux Rapids into the Chats Lake, and ultimately lost. The estimated cost of the boom is \$4,500. The parties interested, proposed to construct it during this winter, under the direction of the Superintendent, at their own cost, trusting to be reimbursed by an appropriation, and upon that condition, and the payment of a toll, they have been authorized to proceed, and the works are now in progress.

The Union Suspension Bridge, at Ottawa, under the charge of Mr. Merrill, is an important thoroughfare, and has yielded this year an income of \$1,866. The floor beams, which are now 18 years old, are found to be much decayed, and no longer safe ; and it is therefore recommended to replace them by wrought iron girders, with a view of making the roadway permanent, and obviating in future the necessity of interrupting the traffic to make repairs. The flooring and hand rail may be renewed in wood, as they can be readily replaced at any time, without inconvenience to the traffic. These repairs are estimated at \$3,500, and that amount should be embraced in the Estimates for this year.

A further sum of \$4,000 is required for the reconstruction of the Hull Slide, which is very much decayed, and although with care, and patching, it may be used for the next running season, it cannot be depended upon for another year.

CHATS CANAL.

No further expenditure has taken place on this Canal, during the past year ; and for the reasons stated in the previous annual report of the Department, the works remain suspended.

PORTAGE DU FORT ROAD.

The contract being unfinished at the setting in of winter, it became necessary to suspend operation on this Road until the spring. Some chopping, the trimming off of slopes, and the laying on of about sixty toises of stone, still remain to complete the contract, which can be done in the course of a few weeks in the spring, and thus confer upon the trade of the Upper Ottawa, the full benefit of this improvement.

ST. MAURICE WORKS.

The several works constructed on this river by the Government, for facilitating the descent of lumber, have operated well during the past year, notwithstanding the water raised to the unprecedented height of 23 feet. They have been maintained in good working order on the moderate outlay of \$543.21 for repairs, and as far as can be seen, those for the present year will not exceed that sum.

A further saving in the cost of management has been affected this year, by uniting the duties of the Paymaster to that of the Superintendent ; but there appears little prospect present of reducing the cost to an equality with the Revenue directly obtainable from the dues.

The cost of maintenance for 1859 was..... \$7,234.54

And the Revenue for the same year was..... 2,121.84

The indirect revenue from Crown dues, on the saw logs and lumber got out, and on the ground rent for timber limits, is not of course taken into account. During the past year only *five* parties carried on lumbering operations on this river, but it appears that this year there are no less than *fourteen* establishments at work upon it; some increase in the Revenue may therefore be expected, and ten times the quantity of lumber might be put through these works without making it necessary to increase the present establishment.

As the extent and character of the government works on the St. Maurice may not be generally known, the report of the Superintendent for last year (Appendix F) giving a brief account of their cost, extent, position, management, and revenue, is appended hereto.

THE SAGUENAY WORKS.

For lumbering purposes.

The works described in the previous Reports of this Department, as being undertaken to facilitate the lumbering operations on the Saguenay, are fast drawing to completion, and it is confidently expected that they will be ready for use for the next "*driving season*" in spring. More than a mile of the long slide has been completed, and the foundation of the remaining portion has been laid. The workmanship is reported good, and the materials carefully selected. The dams already built, operate well, and have resisted the floods of last year in a very satisfactory manner.

A scale of tolls is now under consideration, and will be fixed before the opening of the works in spring.

RIVER SCUGOG, AND INLAND WATERS OF THE NEWCASTLE DISTRICT.

The new works, commenced under recent appropriations, having been suspended at the close of 1858, were not resumed in 1859, and, consequently, remain in much the same state as described in the last Annual Report of this Department. The expenditure charged to construction in 1859, amounting to \$7,640.14, is for the balance due to the contractor for work done during the previous year, and for a pumping engine which had been purchased for the use of the works.

The attention of this Department having been called to the state of the improvements on Scugog and Bobcaygeon, undertaken by the Government for facilitating communication between the back townships; and enquiries having been made in reference to them, it was considered desirable, before incurring further outlay in their prosecution, that the Chief Engineer of this Department should make a careful examination of these works, and report fully on their condition,—furnishing an estimate for their completion, and suggesting such regulations as might be necessary to secure their future preservation and efficiency.

That officer has accordingly made his inspection, and furnished his Report upon these works, which will be found in Appendix G. It contains nearly all the information that could be desired on this subject, but, in order to arrive at a proper estimate of the cost of completing them, it was found necessary to have surveys and sections made of the Scugog

River, which, being as yet incomplete, the action of this Department in reference to them is, for the present, deferred.

LAKE AND RIVER LIGHTS, BEACONS, &c.

Above Lachine.

The three iron vessels, for Light House service on Lake St. Louis, referred to in the last report as being then under contract, were completed and brought into use in the latter part of last year. They have been found well adapted to the purpose, and the position for which they were made ; but the upper one, from its exposed position, and the greater elevation necessary to be given to the light, labours considerably in a heavy sea. This inconvenience will however, to some extent, be remedied before placing the vessel at its station next spring.

The Light Houses, and other works connected with this branch of the service under this Department, have been maintained in an efficient state throughout the season, for the most part with ordinary repairs. In some few instances, it was found indispensably necessary to build protection works against the effects of storms, which, owing to the prevalence of very high water for some time past, have been unusually severe. Several works of a similar nature will have to be constructed during the present year.

The service of delivering the supplies at the different stations, was satisfactorily performed by contract after Public Tenders were received, and at much less expense than theretofore.

The works for maintenance referred to as of an unusual character, are as follows :

Constructing a new Pier at Gross Point on Lake St. Francis. Repairing and securing the foundation of the Light House at McKie's Point. The purchase of land and erection of a dwelling house for the keeper, and protecting the Light House and keeper's dwelling on Cherry Island. Forming a new foundation for, and making alterations to the Light House on Jack Straw shoal, River St. Lawrence. Repairs and protection of buildings at Nine Mile point. Securing foundation and making repairs to range light at Presqu'île, on Lake Ontario.

Several alterations had to be made in the keeper's dwelling at Mohawk Island, and means of access established between it and the Light House. At Long Point, Lake Erie, a new dwelling was erected for the keeper, and the Light tower repaired and both protected from the effects of high water.

The works necessary to be undertaken this year are the following :

Rebuilding the beacon in Lake St. Francis, constructing a house for the light keeper at Cole's shoal ; another at Lindoe Island, and another at Burnt Island, forming a new foundation for, and securing the light on Spectacle shoal, River St. Lawrence.

Securing the foundation of the buildings at Point Peter, and Gull Island, Lake Ontario.

Additional walling for protection of buildings at Mohawk Island. Rebuilding Light House at Port Maitland, and building a house for the keeper. Further protective works to the Light House on Pelee Island, and building a house on Point Pelee, for the keeper of the light established on the reef.

These works are estimated to cost \$11,750.

These, together with the works and repairs effected during the past season, will place the Light Houses and works connected with them, in a more secure and serviceable condition than they have been for many years past.

The Light Houses recently erected on the Coast and Islands of Lake Huron, referred to in the former reports of this Department, were so far completed as to admit of the lights being exhibited in the early part of the past season, and, since that time, they have been maintained in a thoroughly effective condition.

The Chief Engineer of this Department, who examined the whole of them in July last, with a view of ascertaining their condition, and effecting a settlement with the contractors who did the work, reports that the Buildings are constructed of a durable class of materials, and the workmanship executed in a creditable manner, and that the lanterns and lighting apparatus, procured from the Patentee, in Paris, have fully answered the expectations as to their efficiency, and the brilliancy of the Lights ; but that he found it necessary for the future safety of the Works, to make several important changes in the mode of securing and fitting them up, which, although necessarily occupying considerable time, in no case interfered with the regular exhibition of the light.

The Lights being now fully completed, and in use, are visible in moderately clear weather at a distance of from 15 to 20 miles, and some of them are even said to have been seen at a distance of 25 miles. They have proved of essential service to the navigation on the Lake, and may be considered sufficient for the Georgian Bay, and East Coast of Lake Huron, for many years to come; but for the navigation of the north channel, it will probably soon become desirable that the other four Lights for that channel, which were placed under contract in 1855, should be proceeded with.

benefit of Navigators and Owners of Vessels on this Lake, the following information, in reference to the six new Lights recently established, has been prepared.

Light.	Height of Light over Water Surface.	Height from Base to Centre of Light.	Characteristics of Light.		REMARKS.
Arke.....	87 feet	80 feet	Revolving White.	2nd Order.	(A) This Light marks out a dangerous reef which runs out a considerable distance beyond it into the Lake, directly in the line of coasting vessels; it is readily distinguished from Ooderich on the South, or Chantry Island on the North, both of these being fixed lights.
Island...	86 do	80 do	Fixed White.....	2nd Order.	(B) This Light enables vessels to stand for the Island, under lee of which, on the East side, there is considerable shelter; but a reef runs out to the S.W., fully $\frac{1}{2}$ of a mile from the southerly point of the Island.
Cove.....	90 do	80 do	Flashing White.	2nd Order.	(C) Situated in the strait between the Georgian Bay and Lake Huron; light easily distinguished, vessels pass to the North of it at a distance of $\frac{1}{2}$ of a mile or more; at about 3 miles to the North of it is a sunken rock on which there is only 4 feet of water.
Island...	130 do	80 do	Fixed White.....	3rd Order.	(D) This Light, in addition to its other advantages, is of service to vessels making Colpoys Bay, which affords good shelter and holding ground, from 2 to 10 fathoms of water.
Range Island.	86 do	80 do	Revolving White.	2nd Order.	(E) This Light is situated to the Westward of the entrance to Collingwood Harbour.
Island	41 do	55 do	Fixed White.....	4th Order.	(F) This Light is on the S.E. spit of the Island, and on the west side of the southern entrance to the Harbor. This Harbor is well sheltered, and has a depth of from 5 to 12 fathoms. The South entrance has a depth of 16 feet, and the two Northern ones are from 6 to 20 fathoms deep.

HARBOUR IMPROVEMENTS, LAKE HURON.

The Landing Piers, and other works of a similar nature, constructed at different places on the coast of Lake Huron and the Georgian Bay, were examined during last summer by an Engineer of this Department, who reports, that at—

PENETANGORE OR KINCARDINE,

The works have been carried to the full extent the amount granted by the Government of

consist of two parallel lines of piers placed 100 feet apart. The Northern one is 290 feet long, and the Southern 290 feet. The cribs are formed, in part, of piles, driven in front and rear, and the remainder of crib work. The North pier is covered with

plank, but underneath them the spaces between the piles are empty. Nothing has yet been done towards dredging out the channel between the piers, or towards forming the proposed basin inside.

This place, although exposed to the full sweep and action of the S.W., West, and N.W. winds, affords a very good landing place for such vessels as have occasion to call in moderately calm weather.

When these works were undertaken, it was clearly understood that the Local Municipality to whose credit the aid was granted, and assistance given from time to time during the progress of the work, would raise such additional funds as were necessary to proceed with the improvements to such extent as would render them practically serviceable to the locality; but this Department has not yet been informed that any such provision has been made by the municipality to carry out this understanding.

INVERHURON.

This place is situated on the boundary line between the townships of Bruce and Kincardine, where a large tract of land has been laid out into a village plot.

The landing pier built here some years since, is about 450 feet long, and is formed of detached cribs connected together by longitudinal stringers planked over at top. The work stands well, except that a few of the top planks have been forced off by the action of the sea between the cribs.

This pier will be handed over to the care of the Local Municipality, which in future will be expected to provide for its maintenance.

PORT ELGIN.

The works connected with this pier have been completed in a substantial and creditable manner, under the management of an Incorporated Company, aided by a portion of the general appropriation towards Harbours and Piers on Lake Huron. The condition of the grant having been complied with, the sum of \$4,000 allotted to these works has been paid.

This Pier has already proved to be of great advantage to the locality.

SOUTHAMPTON.

The Pier, or breakwater, as it may be called, at the mouth of the Saugeen River, has been completed to the extent authorized by the appropriation. It has been carried out 300 feet from the shore, and about 100 feet upon the low part of the beach, in order to prevent the shingle passing over, in case of storms.

The object aimed at by its construction, was to give the current a direction that would have a tendency to prevent the formation of a bar which annually accumulated at the mouth of the River. Its effect, for the distance before stated, has been so far satisfactory; but the water still continues as shallow as heretofore for fully 600 feet beyond the outer end of the Pier, and doubtless will continue to do so, until the work is extended.

It is intended to hand this pier over to the care of the Local Municipality, as in other similar cases.

CHANTRY ISLAND.

The Break-water constructed on the N. E. end of this Island, has rendered the shelter for vessels under its lee, much more secure; and the Light erected there affords facilities for making it with greater certainty.

The slight damage done to the upper part of the work by the ice during last winter, has been repaired.

In view of the fact that the great extent of coast on Lake Huron, presents little or no facilities for the construction of good harbours, it is important that this work should be improved so as to render the harbour a safer asylum for vessels in stress of weather; by extending and raising the Pier as much as may be necessary to secure that object.

OWEN SOUND.

The works at this place consist principally of straightening and deepening the channel of the River Sydenham, from its mouth upwards, to about the centre of the town plot, and of forming a basin inside sufficiently large to admit of turning an ordinary sized steamer in it, and in which a certain number of vessels can safely lie during winter.

Towards these objects, the Government granted the sum of \$9,000, and the Municipality raised by Debentures the further sum of \$12,000.

The works have been proceeded with under a contract entered into with the Corporation, subject to the approval of this Department. They are now nearly completed, and have so far been found of great service to the town and the adjoining country.

PORT STANLEY HARBOUR.

Under the authority of Council, this work has been given over to the London and Port Stanley Railway Company, upon the following conditions :

That the Company should at once proceed with the works necessary for the protection of the Harbour, and use all diligence to complete its construction. That they should receive the tolls of 1858, and a balance of \$2,899.89, authorized to be expended on certain works of security. That they should pay the late contractor the sum of \$5,418, for the value of his plant, to be delivered by him, and to assume the payment of any materials he had delivered, and for which he had not been paid. That they should be authorized to collect the tolls, as fixed by the Government—on condition of expending at least the whole of this amount in improving the harbour. That the money to be paid over to the Company, should only be advanced on satisfactory certificates as to the progress of the work.

The Crown reserving the right to assume the Harbour again, at any future time, without being subjected to any claim for compensation, except paying the Company the value of the improvements made by them, over and above the tolls collected, or which ought to have been collected by them during their possession. Returns to be made to the Provincial Secretary, on the 1st January of each year, and the Company to give security for the due fulfilment of the conditions of the transfer. In accordance with these conditions, the Company have proceeded with the repairs of the harbour, and have extended the western pier, inwards, towards the land, and the expenditure of \$7,956.79, in 1859, shewn in Statement No. 1 of

Appendix A, is for payments made to the Company for work performed, and expenses incurred by the fulfilment of their obligations under the transfer.

BURLINGTON BAY CANAL.

The sum of \$3,464.59 has been expended during the past year, in completing the repairs of the north pier, and in the construction of a breakwater, 226 feet in length, extending from the south pier, along the beach in front of the light-house. The evil consequences which have hitherto resulted from the sea making its way across the beach, and carrying sand through the Ferry Recess, and depositing it in the channel, are thereby entirely removed.

The superstructure, however, of the south pier is in a very decayed state, in consequence of which the pier is so much weakened, as to give rise to serious apprehensions for its safety during storms. That portion of it, extending outwards from the Ferry Recess, is much exposed to the easterly gales, during which the sea breaks heavily over it, tearing up the planking, and throwing the stones into the channel. Under the authority of Council, arrangements have been made for getting all indispensable repairs completed during this winter, in order that the works may be secured before the opening of the navigation in Spring.

The Superintendent in charge (Mr. Woodruff) reports the estimated cost of the repairs necessary to put this Canal in good order, to be \$28,782.40. The balance of appropriation applicable to these repairs is \$13,335.31, leaving the sum of \$15,447.09 to be provided for their completion.

OTTAWA SURVEY.

In accordance with the recommendation contained in last Report, it was found necessary in order to ensure uniformity, to authorize one of the gentlemen in charge of the survey of one of the sections, into which this work has been divided, to exercise a general supervision over the whole operations, and to place the result of the Sectional Surveys in his hands, for the purpose of obtaining a general and comprehensive Report. Mr. T. O. Clarke was selected for the duty, and his final Report is just now obtained, and is in possession of this Department, together with complete plans, profiles, and detailed estimates.

An abstract of the Report will be found in the Appendix; but the following is in substance the result.

The distance from the mouth of the French River to Montreal by the route surveyed, is 430.76 miles, of which 351.81 miles is already a good navigation, requiring no improvement. Of the other 78.95 miles, 29.32 will require to be Canal navigation, and the remaining way be improved, so as to connect the whole into a first class navigation for vessels drawing 12 feet of water.

The cost, exclusive of deepening the Lachine Canal and Lake St. Louis, and apart from damages and expenses, is estimated at \$12,026,851.

A route would effect a saving of distance between Chicago and Montreal, over the one by the Welland Canal, of 343 miles; but with an increased lockage of 15 locks,

and an additional rise and fall of 169.60 feet. The Lake navigation by the existing route, is 1,145 miles in extent, and the Inland or River 134; when by the Ottawa, the former is 575 miles, and the latter 401.

ENLARGEMENT OF THE ST. LAWRENCE CANALS.

The Estimate furnished by the Chief Engineer of this Department, amounting to \$1,028,000,—the details of which are given in his Report (Appendix H)—is made in compliance with the Resolution of the House of Assembly of the 16th March, 1859; and provides for the *deepening only* of the St. Lawrence Canals for a draught of 10½ feet water.

In giving consideration, however, to the question of increasing the capacity of these canals, it appears to be of equal importance to their success, that the locks, besides being *deepened*, should be *enlarged*, or lengthened, so as to pass the larger and more profitable class of vessels; especially the Propellers of heavy burden. In a list, which has been furnished to this Department, of 36 Propellers plying on the Upper Lakes,—twenty of that number, being from 185 to 240 feet in length, are too long to pass these locks; so that, by merely deepening the locks, without *adding to their length*, only a partial improvement would be effected.

It appears desirable, therefore, before embarking in any expenditure, to increase the efficiency of the Provincial Canals; that the dimensions of the Locks, and the draught of water proper for this navigation, should be fully considered, and decided on; and that being done, that surveys and estimates should be made under this Department, for the enlargement of the Welland and St. Lawrence Canals to that scale.

The information in possession of this Department, does not enable its officers to furnish such estimates, without special surveys being made for that purpose.

In 1854, Mr. Shanly made a survey for a Branch Canal, to connect the Welland Canal with the mouth of the Niagara River; and his Report thereon was published in the Report of this Department for 1856. The line from Thorold to Niagara is 12½ miles long, and his Estimate for a Canal, commensurate with the scale of navigation adopted for the Sault Ste. Marie Canal (which is 100 feet wide at bottom, with Locks of 350 feet in length, 75 feet in width, and 12 feet depth of water), amounts to £989,625.

This survey, however, was made with special reference to a side cut to Niagara,—not for the enlargement of the Welland Canal itself; and before any conclusion can be arrived at, as to the most feasible line for the improvement, it would be necessary that a survey be made with direct reference to that object.

PROVINCIAL TUG STEAMERS

ON THE

LOWER ST. LAWRENCE.

This service has been efficiently and satisfactorily performed. The number of vessels towed last year was 114, and the percentage, under the Order in Council, on the reduction from the Tariff, was \$8,757.69.

The reasons which led to the establishment of this line, and the various questions affecting its operations, were fully adverted to in last year's Report, and it would be superfluous to repeat them here.

In the month of August last, the contractor proposed to the Government to abandon all his contracts for the Tug, Trinity and Light-House service, and for the mail service to the Lower Provinces, and to transfer to the Government the five steamers, "Queen Victoria," "Napoleon III.," "Lady Head," "Advance" and "Admiral," on condition that the Province released him from the balance of £18,000 of his debt due in respect of the advances which had been made to him in former years on account of the same service, and that it relieved him from a mortgage existing on the vessels in favor of the Bank of Upper Canada, for £23,386, and paid him £15,000 to enable him to meet other liabilities—the contractor to perform the service for the then current year, and the proposed arrangement to take effect at the close thereof.

By the terms of the agreement, dated August 1855, the contractor was intitled to the bonus of £11,300 until the end of 1864. The services performed by his vessels, either under existing contract with the Trinity House, or after tender by public competition, or by private agreement, were :—

1st. Mail Service to the Lower Provinces - - - - -	£2,500 a year.
2nd. Trinity House Service—embracing the laying down and taking up of Buoys in the Lower St. Lawrence, carrying supplies to the River Light-Houses and voyages with Apprentice Pilots -	2,000
3rd. Trips to the new Light-Houses at Belle Isle, Forteau Bay, Anticosti and Cape Rosier, for the transport of provisions, and also conveying materials and workmen for repairs—one trip by public tender at £2,000, and the 2nd at £1,000 - - - - -	3,000
4th. The Tug Service £11,300 a year—to which add the 30 per cent. allowed by order in Council on the 50 per cent. reduction in the Tariff Rates—the remaining 20 per cent. being borne by contractor—average £1,500 a year - - - - -	12,800
	<hr/>
	£20,300 a year.

In addition to the foregoing services performed by Mr. Baby, the following performed by other parties had also to be defrayed ;—

5th. Protection of Fisheries - - - - -	2,500
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6th. Grosse Isle Quarantine Service - - - - - 1,000

In all £23,800

But it is believed that an additional sum of £1,000 would be required to be paid for the service to the Lower Light-Houses, and a further sum of £1,000 for the Trinity House services, making in all the sum of £25,800.

The considerations which presented themselves for the decision of the Government were these :—At the time the Contract was entered into, the system of Towing had not been introduced. There were no means of relieving wrecks, or aiding vessels in distress, the navigation of the St. Lawrence was naturally considered dangerous, and the rates of Insurance were correspondingly high. The establishment of the Line in question undoubtedly gave a new character to the navigation, largely reduced the rates of Insurance, and the length of voyages, especially on the more valuable class of vessels using the tow. But while these public benefits were accomplished, and the practice of using tug boats was introduced, the consequence naturally was to bring into existence other steam tugs, of a far less expensive character, and, in a certain degree, more suitable for plying on the upper part of the river. These had been built by private enterprise, to the number, it is believed, of 16, and entering, as they did, into competition with the far more expensive and powerful Provincial boats, naturally diminished their earnings. The object which had induced the Government, in the first instance, to foster the undertaking, was in a great measure accomplished. The Provincial boats, being of great power and size, were more suited for towing in the Lower part of the Gulph, but the use of Ocean Steamers to a great extent superseded the use of tugs in that navigation, while the completion of the smaller and more profitable private tugs, in the upper part of the River, diminished the pecuniary return of the Provincial undertaking. It was therefore considered desirable, by a fair compromise with the contractor, to relieve the Province from the heavy future annual charge of the subsidy.

If the various services above enumerated, necessary for the public interests, could, by the assumption and direct employment by the Government of the contractor's vessels, be as economically performed as to entail a less annual charge on the revenue than by the existing arrangements with him, the offer was manifestly an advantageous one.

As regarded the vessels themselves, (the three most valuable being of iron, and nearly new,) the cost of the whole to the contractor, was upwards of - - - - -

£96,000

The Contractor offered to transfer them on payment of the three following sums :—

1st. His debt to the Bank of Upper Canada, - - - - - £23,386

2nd. On being discharged from the balance of his own debt to the Province - - - - - 18,000

3rd. An actual payment to himself, to wind up his business, of - - 15,000

£56,386

Cost of vessels to Contractor, in excess of what Government paid, being - - - - -

£39,614

Viewing the question in another aspect, without reference to the assumption of the Steamers, the saving to the Government on the Tug Contract was as follows :—

1st. Annual subsidy of £11,300 for 5 years, amounted to	- -	£56,500
2nd. 30 per cent. on the towage at past average, which, though only allowed by Order in Council, was nevertheless a necessary consequence of the reduction.	- - - - -	12,250
		———— £68,750
Deduct however the balance of Contractor's debt, repayable by certain instalments.	- - - - -	18,000
Left total payable under these existing arrangements to Contractor during the five years.	- - - - -	£50,750
In lieu of which the Contractor agreed to receive—		
1st. Debt to Bank.	- - - - -	£23,386
2nd. Payment to himself	- - - - -	15,000
		———— 38,386

Shewing a saving to Government on the Contract in five years of - £12,864

But considering that the Government was left in possession of Steamers whose cost was £96,000, at the price (including its own debt) of £56,386, the question how far a profitable use could be made of these Steamers, in the Public interests of the Province, was necessarily an important element in deciding on the Contractor's offer.

The services which were indispensable, were :—

1st. The Trinity House requirements, comprising the laying down and taking up of buoys, carrying supplies to and materials for repairs of the Light-Houses other than the four new remote Lights, and visiting those Light-Houses, and carrying the apprentice pilots.

This service cost, and could not, it is believed, be efficiently performed, under £3000 a year, for though the existing Contract which expired last year, limited the sum to £2,000, the new wants which the increase of Trade had created, would probably have required an additional payment of £1,000,—making for the efficient performance of this service, £3,000 a year.

2nd. The like service to the four remote lights at Belleisle, Anticosti, Forteau and Cap Rosier. For this service, which the undersigned endeavoured to accomplish by means of one trip of a steamer, tenders were asked by public advertisement and but two parties offered—M. Baby being one at £2,000 for the trip, and the second being the owner of a vessel pronounced by the Trinity House unfit for the service. When these remote lights were visited with the supplies for the year, it was found that very serious repairs were required and that a second trip was indispensable. On the strong remonstrance of the Trinity House, arrangements were accordingly made with the contractor to perform a second trip with the necessary materials and mechanics, at the reduced rate of £1,000. Experience shews that it would be unwise to neglect visiting these distant posts twice, at least, each year, and if the Government had to depend on its execution by public tender, it does not seem practicable to get parties capable of performing it under £3,000 or £4,000.

3rd. The adequate protection of the fishery interests against foreign encroachment, and

the preservation of regularity among the fishermen themselves, now costs, by means of a schooner, the capacity of which to perform the service effectively is insufficient—£2,500.

4th. The postal service and communications with the Bay of Chaleur and Pictou and the Gulph settlements, which, though annually voted, have yet been shewn to be of so much importance, that their maintenance might fairly be considered for some years to come a matter of settled policy, £2,500.

Making the total cost of performing these indispensable services, (exclusive of towing or assisting wrecks, or quarantine requirements)—£12,000.

In addition to these items, it has to be borne in mind, that the tug service could not be entirely dispensed with, and it was necessary, in the interest of the trade of the Province, that steamers of sufficient power and strength, should be available to relieve wrecks or ships in distress—services which alone, under the existing contract, cost the Province £12,800 a year.

It was equally apparent that in view of the erection of the additional light-houses in the Gulph, the services of powerful steamers were necessary, and these, if obtained by contract, must add a heavy item to the other charges already specified.

The whole of these indispensable services, as well of the Trinity House as for the Fisheries and the Postal services, it was estimated, could be performed, and the necessary provision also made to meet the wants of vessels actually requiring the use of large steamers, whether for towing or for relief—and to perform the additional works required in erecting the new light-houses, at a gross annual cost for the entire season of running the vessels, of £14,431; or, deducting the sum of £4,500, which it was estimated might be realised from towing, and the charter of one of the steamers intended to ply to the Gulph Districts at an actual yearly outlay to the Government of £10,000.

It was therefore determined to carry the proposal into effect; and by an order in Council, dated the 23rd August, 1859, the arrangement was approved of, subject to the sanction of Parliament. Should that sanction be given, it is conceived that the vessels can best be operated, with as little disturbance as possible in the mode of management adopted by the Contractor, whether as regards wharfage, stores, provisions, staff or crew. The arrangements made by him for the coming year have been provisionally assumed by the Department. A small supply of coal, requisite for the spring use, has been provided, and the vessels intended to be operated are being placed in thorough repair. For all which provision is made in the gross sum of £14,500, specified as the cost of the yearly operations

TUG SERVICE.

Upper St. Lawrence.

The tug service between Lachine and Kingston has been performed by the contractors, Messrs. Calvin and Breck, during the past year, in a very satisfactory manner, and judging from the absence of all complaints, the conditions of the contract appear to have been faithfully carried out.

Owing to the extreme depression of trade, from the causes before referred to in this report, the number of vessels towed last year is less than in 1858 by about twenty-five

per cent. The number of vessels towed on the several divisions, and the moneys collected for the same, are given in the following

STATEMENT.

DIVISIONS.	Towages in 1858.		Towages in 1859.	
	No.	Amount.	No.	Amount.
		cts.		cts.
Leitham to Beauharnois Canal.....	1,253	8679 52	1,262	7807 34
Beauharnois Canal to Cornwall.....	41	12214 32	615	8671 08
McIntosh's Landing to Kingston.....	917	23321 27	573	16943 16
Totals.....	3,011	44215 11	2,450	32421 57

MONTREAL OCEAN STEAMSHIP COMPANY.

In the Address to Her Majesty, passed during the last Session of the Legislature, the injustice inflicted on Canada by Great Britain, in subsidising two Rival lines of Ocean Steamers to Foreign Ports, was fully pointed out. These subsidies operate as a direct bounty in favor of the Cities of New York and Boston, and therefore aid in drawing thither that Trade which Canada sought to attract, by the construction of those great works of Internal Communication which she was encouraged by the Imperial Government on distinct grounds of national policy to undertake and prosecute. The proceedings adopted to follow up the object which that Address had in view, will, it is earnestly hoped, result not only in a recognition by the Imperial Government of the injustice to Canada of the existing arrangements, but in obtaining substantial aid towards the support of the Canadian Line; for it cannot be supposed, when the real facts are appreciated, that Great Britain will continue invidiously to foster the Trade and interests of a foreign country, to the direct detriment of those of her own most important Colony.

The importance, and indeed the necessity, of a weekly line of steamers to Europe from Canada, as a means of ensuring freight at all times for the Western Produce, and without which it cannot be attracted through Canadian Channels, has been adverted to in a preceding part of this Report. The evidence given before the Committee of the House of Commons on the subject, and the communications with the Colonial Secretary, are already in the possession of the Government.

While it is gratifying to mention the unprecedented success which attended the voyages of these Steamers to the St. Lawrence during the past year, the wreck of two of the ships on their westward winter voyages is matter of deep regret. These disasters, however, though discouraging at the moment, cannot permanently affect the ultimate success of the undertaking, for the advantages of the route have been so completely demonstrated, that the accidents can have no other result, than in prompting increased efforts to remove, by future success, the existence of any unfavourable impressions which may have arisen with reference either to the route or the enterprise itself.

Full details of the operations of the Steamers will be found in Appendix N.

PUBLIC BUILDINGS, OTTAWA.

Every effort has been made for an early commencement and vigorous prosecution of Public Buildings in Ottawa destined for the accommodation of the Legislature, the several Public Departments, and the Governor General, when the seat of Government shall be transferred to that city, with the view of having them completed and in readiness at the earliest possible day.

In the erection of buildings intended for a permanent seat of Government, it was felt to be of the utmost importance to obtain the best talent of the country in designing for them suitable and appropriate plans, and the offer of first and second premiums of £250 and £100 for the best and second best designs for the Parliamentary and Departmental Buildings respectively and of £100 and £50 for the Governor General's residence, was responded to in a spirited manner by the architectural profession. Upon less than two months notice, no less than thirty-three separate designs, in different styles of architecture, and illustrated by numerous plans, sections, elevations, perspective drawings and specifications, were submitted to this Department by eighteen architects, of whom one resided in the State of New York, and the rest in Canada.

For the Parliamentary Buildings there were sixteen designs by fourteen competitors, ten of which were either of the Classic or Italian styles, and six of the Norman and Gothic. For the Departmental Buildings four were Classic and three Gothic, making ten designs by six competitors. For the Governor General's Residence there were ten designs by ten competitors.

Many of these designs evinced great taste, and some of them were conceived and executed in the best style of art, highly creditable to the architectural profession of this Province.

The first premium for the Parliamentary Buildings was awarded to Messrs. Fuller and Jones, of Toronto—the second to Messrs. Stent and Laver, of Ottawa—both designs being in the Civil Gothic style.

The first premium for the Departmental Buildings was awarded to Messrs. Stent and Laver, and the second to Messrs. Fuller and Jones. Both styles in this case being Civil Gothic.

The first premium for the Governor General's Residence was awarded to Messrs. Cumberland and Storm, and the second to Messrs. Fuller and Jones. The design of the former being Venetian, and that of the latter Classic.

The architects to whom first prizes were awarded were thereupon immediately instructed to prepare detailed plans, working drawings and specifications and all other necessary information for submitting the work to public competition; and the plans for the Parliamentary and Departmental Buildings having been completed in the shortest possible time, twenty-one tenders were received on the 15th November for the former and twenty-nine for the latter; but in consequence of Mr. Cumberland's absence in England, the plans for the Governor General's Residence could not be got ready until the 18th inst., and the receiving of Tenders will consequently be delayed until the 10th March next.

The two lowest tenders for the Parliamentary and Departmental Buildings were those of Mr. Thomas McGreevy, and Mr. Charles Peters, Builders, of Quebec. Their tenders for both taken in the aggregate amounted to precisely the same sum, and after full

enquiry as to the choice which should be made between these parties, the contract was awarded to Mr. McGreevy. At his suggestion the work was afterwards divided, and the contract for the Parliamentary Buildings was made with him, and that for the Departmental with Messrs. Jones, Haycock & Co., contractors, of Port Hope—the latter having arranged with him to take the work at his prices.

The contract price for the Parliamentary Buildings is three hundred and forty-eight thousand five hundred dollars, and the time for completion is fixed for the first July, 1862. For the Departmental Buildings the contract price is two hundred and seventy-eight thousand eight hundred and ten dollars, and the time for completion first January 1862. In each case the cost of fire-proofing the Buildings respectively is included.

The very important question of Heating and Ventilating has received the fullest consideration, and with the view of obtaining the best information on this subject from practical plumbers, machinists, or other parties, actually engaged in applying their different systems to meet the wants of the community, the works connected therewith were submitted to tender on certain conditions; amongst which it was required that each competitor should describe the system on which his tender was based, and give with it specifications and detailed drawings, shewing its application, to the respective Buildings, and guarantee its perfect efficiency for ten years after it went into operation. On these conditions eight tenders were received, one being for the application of the hot air system, one for hot water in pipes, and the rest for steam either in pipes or radiators. The prices for all the Buildings together varied from \$22,800 to \$94,920. The lowest being for the application of hot air was not entertained, because it was not considered practicable to warm buildings of this magnitude in that way.

The tender which offered the most advantages and came nearest to the requirements, was that of Mr. Charles Garth of Montreal for \$61,285, while it was at the same time the lowest of any, which it would be at all safe to entertain. It is based on the system of heating by steam in pipes laid in vaulted air chambers in the Basement. The first air from without being introduced through these vaulted chambers, is warmed by the pipes on its passage into the apartments, while the vitiated air is drawn off by a perfect system of Ventilation. It is believed that this plan will be found efficient, agreeable and healthy, and will give perfect satisfaction. Mr. Garth's tender has accordingly been accepted conditionally on his making certain modifications required by this Department to ensure the more perfect Heating and Ventilating of all the apartments, and with this view the detailed plans and specifications are now in course of preparation.

THE NORTHERN RAILWAY.

Under the provisions of the Act 22 Vic. ch. 89, sec. 1, measures were taken by this Department to put the Northern Railway in safe working order. To this end the Deputy Commissioner, in conjunction with the Engineer of the Company, having carefully examined the condition of the works, agreed upon an estimate of such as appeared to them most requisite, to the extent of \$60,000, the amount authorised to be expended, and after submitting them to public competition, contracts for their completion were entered into between the Contractors and the Company, with the sanction of this Department, and the works were proceeded with, and completed as speedily as possible. These repairs were conducted entirely by the Company's Officers, but under the direction and approval of the Chief Engineer of this Department, who also made monthly examinations of its progress, and certified the estimates for payment.

This expenditure of \$60,000 has been of the greatest advantage to this line of Railway ; and has accomplished the object of the act in rendering it safe. It will enable the company to maintain this line in a serviceable state for traffic at moderate speed, until the new capital authorised to be raised by the Legislature, is applied in the restoration of all the works during this year.

The money has been mostly expended in works of a permanent character, six miles of track have been relaid with new rails—six miles with old rails repaired, and twelve with new ties, besides a large number inserted at the rail joints throughout the line.

The track has been ballasted four miles to a depth of 16 inches, 1½ to 18 inches, and a good deal on different parts of the line. The roadway, in the ballasted portions, has likewise been widened to 20 feet where embankments occur, and to 24 feet in cuttings. The new rails are laid on new ties, with new-wrought iron chairs, and the surface finished in a superior style.

Eight of the temporary wooden bridges, measuring in all 657 feet in length, have been replaced by stone culverts and solid embankments.

The money thus expended in the restoration of the line, has since been repaid to the Government.

MATAPEDIA ROAD.

The southern division of this highway across the Gaspé peninsula, from the River St. Lawrence to the Bay of Chaleurs, is under the charge of Mr. John Lefebvre, and, on the 24th of December last, the superintendent reports, that "owing to the complicated nature" of the work, several of the contractors having abandoned their jobs," he was "necessarily" obliged to complete them by day work." Eleven miles of road have been finished, with the exception of two bridges in the course of construction.

The amount paid upon old and new contracts, day labor, and supervision,	
was - - - - -	\$3,117 70
Amount yet unpaid upon new contracts - - - - -	808 30
	<hr/>
Total expended during the year - - - - -	\$3,926 00

A balance on hand, is available to meet the above amount of unsettled claims.

The northern division, placed under the care of Mr. J. B. Lamontagne, embraces a distance of 42 miles, of which twelve miles have been put under contract this year, and from the last report of the officer in charge, the expenditure for the year has been \$2,362.87.

GASPÉ AND ST. LAWRENCE ROAD.

Upon that portion of the above line of road skirting the north shore of Gaspé Basin, from Watering Brook to Seal Rock, (a distance of six miles and a half) two deviations were recommended by the superintending officer, in order to avoid heavy bridging over travines upon the coast line of road. The first improvement, constituting a detour round the valleys of the Three Runs, and Halibut Brook, towards little Cap aux Os; the second, affording a short cut north of Grand Cap aux Os. These sections, placed under contract during the summer, have been completed and received in part; but owing to the frost having set in early, some indispensable labor in rounding and finishing the road-bed, remains to be performed.

The cost of this portion of the road amounts to \$3214 80, or at the rate of \$498-58 per mile. A bridge over Watering Brook has also been constructed, at an outlay of \$600, and the Superintendent reports that the total present and prospective expenditure of the road along the margin of Gaspé Basin to Grand Grève, will be - - - \$4,272

Leaving this balance of the appropriation unexpended, - - - 5,728

Amount of two appropriations, - - - - - \$10,000

Of the available balance above shewn, it is contemplated to expend a part in completing a road already opened between Watering Brook and Griffin Cove, on the River St. Lawrence, a distance of about 7½ miles, upon which, up to the present time, a number of substantial bridges have been built, and other improvements commenced. The Superintendent reports favorably of this communication, and estimates the cost to complete the road, at \$3,605, which will still leave an unexpended sum of \$2,123, applicable to the further repairs and improvements of the Gaspé and St. Lawrence Road.

GRAND BAIE AND MALBAIE ROAD.

The only outlay upon this Road has been \$32-80, taken from an unexpended balance of \$186 22, for the hire of laborers in clearing the track of fallen trees and timber, which obstructed the travel upon the road.

THE TEMISCOUATA,

Or Communication Road between Canada and New Brunswick.

This road is a very important one, as a principal means of communication between New Brunswick, and the only land mail route between the two provinces,

affording great facilities to parties lumbering on the River St. John and its tributaries, and enabling them to get in their supplies from the settlements bordering on the St. Lawrence. A very considerable extent of good soil, moreover, is found in the western vicinity of the new road, capable of settlement.

The earth works, which had been suspended since the autumn of 1858, were recommenced on the 13th of October last. Up to that time, the superintendent, Mr. Rosa, had been occupied in re-surveying and making partial alterations, calculated to improve the line; and the preparing of timber, hauling of stone, &c., for new bridges and abutments, were pushed on with energy.

The works accomplished this autumn are as follows:—

Three miles of connecting portion between old and new roads.

General repairs of about thirty miles in extent of former roads.

Five small wooden bridges, newly built, and timber got out for new bridges, over Green River, the Cabanean River, the two Syriac Brook Rivers, the River au Bouleaux, and Savanna Brook.

About three-quarters of a mile of new road and ditching made, and a quantity of stone and earth excavation delivered for the above bridges—making the amount expended for the year \$3,386.09.

The officer in charge is actively engaged, at the present time, in drawing upon the frozen swamps cedar timbers, and fascines for causewaying the softer portions of the route where passage with horses would be impracticable in summer.

REMOVAL FROM TORONTO TO QUEBEC.

The most careful arrangements were made to carry this part of the Public service into effect, in as efficient and economical a manner as possible. The Assistant Engineer was dispatched to Quebec, to examine and report on the various Buildings, suitable for the Public Departments; and after considerable delay, the requisite accommodation was obtained at a less cost, as will be seen from the following comparative statement, than has been payable in Toronto.

Comparative Statement of Rent and Taxes and Insurances on Buildings occupied by the Public Departments in Quebec and Toronto.

TORONTO.	Annual Rents.	Taxes & Insurance.	QUEBEC.	Annual Rents.	Taxes.
	\$ cts.	\$ cts.		\$ cts.	\$ cts.
Executive Council, }	1044 75	236 00	Executive Council, }	1800 00	60 00
Old Hospital. }			Hotel St. George, }		
Minister of Finance Dept....			Minister of Finance Dept....	900 00	80 50
Receiver General's Dept.....	1200 00		Receiver General's Dept. } ..	1200 00	40 00
Public Works Dept.....	600 00	88 50	Bureau of Agriculture. } ..		
Crown Lands Dept.*.....	1504 00	240 00	Public Works.....	600 00	21 00
Bureau of Agriculture, } ..	1600 00	252 00	Crown Lands.....		15 00
Adj't. General's Office } ..			Post Office Department.....		13 00
Post Office Dept. in }					
Crown Lands. }					
	\$5948 75	816 50		\$4500 00	229 50
	816 50			229 50	
	6765 25			\$4729 50	

*Building constructed at expense exceeding \$24,431.78, and cost of replacing yet to be covered, \$13,862.80

The outlay on requisite fitting up, has also been kept within the narrowest compass possible, as will be seen from the *General Expenditure* of the Department.

After full consideration and an examination of the question in all its bearings, it was deemed advisable to effect the conveyance of all the Departmental and Legislative effects, furniture, records, and a certain portion of the Library, by one Contract, for which Tenders were accordingly invited. Fourteen tenders were received, varying from \$19,948 to \$60,000. The Tender of the party offering lowest, who could give security, was accepted—that of Messrs. Sherwood, Ginty & Co., for \$19,948.

Subsequently, those parties transferred their Contract to Messrs. Jacques and Hay, who were accepted by the Department at the same price ; and it is but justice to them to say, the service was most efficiently and satisfactorily performed. The gross amount paid to them by the Department, for the conveyance of the whole of the Departmental and Legislative effects, and those of the Governor General, and for replacing the same at Quebec, was \$21,086.81 ; the excess of \$1,038.81 over the contract price being for extra carriage, and services which arose during the Contract.

In regard to the removal of the various officers of the Government, with their families and effects, the question of accomplishing this also by contract was fully considered, but so many well founded objections presented themselves to the contract system, that after a prolonged examination, by the Deputy Heads of the several Departments, of the relative advantages and disadvantages involved, it was determined to make a money allowance, based partly on the position and salary, and partly on the number of the family, and to permit the officers and employes each to remove by what conveyance he saw fit. It is believed that the system adopted, has both given general satisfaction, and been in every way productive of a saving to the Province.

The interruption in the public business of the Department, in consequence of the removal was only during the space of one week.

All of which is respectfully submitted.

JOHN ROSE,
Commissioner.

PUBLIC WORKS, 9th February 1860.

APPENDIX TO THE REPORT
OF THE
COMMISSIONER OF PUBLIC WORKS,
FOR THE YEAR 1859.

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- " B.—Report of Mr. Rubidge, Assistant Engineer and Architect on the Public Buildings, in charge of the Department.**
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- " D.—Special Report of the Superintendent of the Welland Canal, on the traffic of 1859.**
- " E.—Report of the Superintendent of Ottawa Works, for 1859.**
- " F.—Report of the Superintendent of the St. Maurice Works for 1859.**
- " G.—Report of the Chief Engineer on the Improvements of the River Scugog, and the "Inland Navigation of the Newcastle District."**
- " H.—Report of the Chief Engineer on the deepening of the St. Lawrence Canals.**
- " I.—Instructions to, and Report of the Chief Engineer on proposed New Light Houses for the River and Gulf of St. Lawrence.**
- " J.—Statement of the Fines and Damages imposed and collected in 1859, on the Beauharnois, Lachine, and Chambly Canals.**
- " K.—Statement of Hydraulic Rents and Leases on the St. Lawrence and Chambly Canals.**
- " L.—Extract from the Report of the Engineer, of the Ottawa Survey.**
- " M.—Circular making certain enquiries touching the course of Trade, and extracts of replies thereto from Her Majesty's Consul at Buffalo, the President of the Board of Trade of Oswego, and the Superintendent of the Welland Canal.**
- " N.—Table giving details of the operations of the Ocean Steamers.**

APPENDIX A.

No. 1.

STATEMENT of the several Public Works under the charge of this Department which are in use and yield revenue, showing the expenditure under the different heads during the year 1859, viz: on Construction, Amount paid for Land damages, and the total Cost of Construction under this Department to the 1st January, 1860,—also the Gross Revenue therefrom during the year 1860, the Cost of collecting the same, together with the Cost of Repairs and Management for the same period, and the Net Revenue or Deficit.

NAME OF WORK.	Expenditure on construction during the year 1859.	Amount paid for damages in 1859.	Total expenditure on re-ops construction to 1st Jan., 1860.	Gross revenue during 1859.	Cost of collecting Revenue during 1859.	Cost of repairs and management for 1859.	Net Revenue for the year 1859.	Deficit for the year 1859.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Canals.</i>								
Welland	47,947 50	1,581 75	4,307,927 78	139,442 55	8509 98	76,578 16	52299 41	
<i>St. Lawrence Canals, viz:</i>								
La Chine	2,851 78		1,988,677 29	69,689 40	10,419 19	20,673 30		
Beauharnois	333 18		1,572,487 11	1668 48	795 90	12,748 96		
Cornwall	5,269 61		463,036 60	182 01	628 31	14,298 46	728 86	
Williamsburg		20 00	1,089,739 93	84 17	1125 00	9,942 18		
Junction	19,504 78		230,738 11			177 95		
General Expenditure	363 16		74,093 38					
<i>Chambly</i>		200 00	67,653 25	16,112 54	1636 25	13,938 86	537 43	1697 71
St. Ours			122,927 65	386 01	659 77	1,555 95		
St. Anne's	80 27		111,056 02	5659 17	935 31	935 22	4093 64	
Burlington Bay Canals	3,464 59		270,635 69	14358 95	800 00	322 63	13266 32	
<i>Slides and Dams, &c.</i>								
Ottawa	25,749 05		594,924 83	33158 08	1000 00	13,539 58	16618 50	4684 32
St. Maurice	201 92		241,719 46	3528 97		7,213 19		300 00
Trent				40 00		400 00		
<i>Harbours.</i>								
Port Stanley	7,956 79		223,128 49	3956 87		27 37	3929 56	
	115,822 61	1,801 75	11,558,742 68	287183 20	26135 73	174,846 76	98442 66	6741 93

* Based on accounts of 1855.

Total net revenue on all Canals, deducting deficit as above.....\$33842 22

VT of the Public Works under the charge of this Department, incomplete, and as yet unproductive, but on which Tolls are to be levied as soon as they are available,—showing the Expenditure thereon in 1859, on Construction, on Repairs and Management, and the Total Expenditure up to the 1st January, 1860.

NAME OF WORK.	Expenditure on construction in 1859.	Repairs and management during 1859.	Total Expenditure to 1st January, 1860
<i>Chate Canal.</i>	\$ cts.	\$ cts.	\$ cts.
Expenditure as shown in last year's Report.			
To Contractor			
Surveys and Engineering expenses up to 1st January, 1859			
Total expenditure up to 1st January, 1859			373,191 98
<i>Scugog Inland Navigation.</i>			
Exclusive of \$352,823 80 expended on Back-waters of Newcastle District and Trent works, up to 1st January, 1856	7,640 14	643 50	101,484 36
<i>Saguenay</i>	10,145 38		32,776 08
	17,785 52	643 50	507,452 42

No. 3.

STATEMENT of the several Public Works and Buildings in course of construction under the charge of this Department, yielding no direct Revenue, but in use for the Public Service, and authorized by Legislative appropriations, shewing the amount expended thereon during the year 1859, and the total outlay upon them up to the 1st January, 1860 ; also the amount expended in repairs and maintenance for the same period.

W O R K S .	Total outlay up to 1st January, 1859.	Expenditure during the year 1859.	Total outlay up to 1st January, 1860.
	\$ cts.	\$ cts.	\$ cts.
Parliament Buildings, repairs, Toronto }	274272 30	542 75	274815 05
Government House..... do. }	5104 18	.....	5104 18
Custom House..... do. }	27986 07	.....	27986 07
Post Office..... do. }	13884 65	.....	13884 65
Observatory..... do. }	9966 83	.....	9966 83
Female Lunatic Asylum..... do. }	159 80	.....	159 80
Osgoode Hall..... do. }	3679 23	.....	3679 23
Gun Sheds..... do. }	597 37	60 32	657 69
Barracks, repairs..... do. }	525 62	.....	525 62
Railway Inspector's Office..... do. }	17662 62	15219 49	32882 11
Custom House .....Hamilton }	52625 42	.....	52625 42
Post Office..... do. }	5510 82	55 85	5566 67
Gun Sheds..... do. }	19568 43	14181 87	33750 30
Post Office.....London }	38210 00	3595 52	41805 52
Custom House.....Kingston }	36196 52	3077 43	39273 95
Post Office..... do. }	4293 92	.....	4293 92
Lunatic Asylum and Gaol..... do. } .....	.....	10052 97	10052 97
Public Buildings.....Ottawa }	292380 40	831 75	293212 15
Court House.....Montreal }	907 63	.....	907 63
Custom House,.....repairs, do. }	1263 60	80 00	1343 60
Gaol .....repairs, do. }	269 99	.....	269 99
Post Office.....repairs, do. }	5422 82	935 75	6358 57
Normal School..... do. }	91706 10	1638 80	93344 90
Marine Hospital.....Quebec }	167170 39	50618 78	217789 17
Custom House..... do. }	4424 12	121 30	4545 42
Gun Sheds..... do. } .....	.....	31096 78	31096 78
Post Office and Parliamentary } .....	.....	4299 35	4299 35
Buildings..... do. }	7071 04	110 02	7181 06
Spencer Wood..... do. }	100 00	.....	100 00
Normal School..... do. }	266 87	51 90	318 77
Gaol.....repairs, do. }	35290 86	72 80	35363 66
Observatory.....repairs, do. }	771 44	51053 91	51825 35
Gaols and Court Houses, C. E. }	505 00	18 65	523 65
Gaols and Court Houses, C. E., }	6 90	5067 14	5074 04
20 Vic., ch. 44..... }	5 47	3550 18	3555 65
Aylmer Court House.....repairs.. }	10 57	1101 81	1112 38
Kamouraska Gaol..... }	4 95	490 00	494 95
Sherbrooke Court House & Gaol .....repairs.. } .....	.....	31 07	31 07
Three Rivers Court House.....repairs.. }	226067 74	32576 36	258644 10
St. Hyacinthe Court House.....repairs.. } .....	.....	.....	.....
Dépôt at Anticosti ..... } .....	.....	.....	.....
Rents, Repairs and Maintenance..... } .....	.....	.....	.....
<i>Light Houses.</i>			
Light Houses below Quebec.....	389971 42	6532 13	396503 55
Light House Apparatus below Quebec.....	54602 16	.....	54602 16
Light Houses (new) below Quebec.....	15601 59	.....	15601 59
Point Pelée Light House.....	53045 33	59 57	53104 90
Snake Island Light House.....	10411 87	18 17	10430 04
Bay of Quinte Light House.....	108 16	.....	108 16
Light Houses, Lake Huron	127103 88	15210 67	142314 55
Light House Apparatus, Lake Huron	74949 16	.....	74949 16
Floating Lights above Lachine.....	115 53	25613 52	25729 05
Gaspé Bay and Harbour Buoys.....	.....	200 00	200 00

No. 3.—STATEMENT of Public Works, &c.—*Continued.*

W O R K S .	Total outlay up to 1st January, 1859.	Expenditure during the year 1859.	Total outlay up to 1st January 1860.
<i>Roads.</i>	\$ cts.	\$ cts.	\$ cts.
Canada and New Brunswick	106734 44	3386 09	110120 53
Metapedia, South.	14000 00	2500 00	16500 00
Metapedia, North .....	.....	2475 66	2475 66
Malbaie and Grande Baie.....	6000 00	.....	6000 00
St. Denis and Cap Chats.....	10000 00	6000 00	16000 00
Marmora.....	4000 00	.....	4000 00
Garrison Road, Toronto.....	1600 50	.....	1600 50
Gaspé Road.....	.....	3289 25	3289 25
Côteau and Province Line Road.....	.....	893 24	893 24
<i>Harbours and Piers.</i>			
Port Bruce.....	6267 47	.....	6267 47
Lake Huron.....	80413 45	11000 27	91413 72
Pier at St. Anicet.....	.....	77 71	77 71
L'Orignal	2000 00	.....	2000 00
Landing Piers.....	768971 02	.....	768971 02
Repairs of Piers	6422 53	369 77	6792 30
Dredging Narrows and New Bridge, Lake Simcoe.....	10138 30	.....	10138 30
Dredging at Picton and Presqu'Isle.....	1013 03	113 25	1126 28
Dredging at St. Clair's Flats.....	19984 45	.....	19984 45
Richelieu Rapids Improvements, (Ste. Anne de la Pêrade)...	13661 06	52 90	13713 96
North River and Petite Nation Bridge Improvements.....	3600 00	.....	3600 00
River Thames Navigation Improvements.....	3814 42	.....	3814 42
Dredging Vessels, Steam Pumps, &c.....	.....	2029 50	2029 50
Total.....	.....	310354 25	

No. 4.

**STATEMENT of Expenditure on certain Miscellaneous Services under this Department,
during the year 1859.**

	\$ cts.
Emigration and Quarantine Service.....	3,162 51
Tug Boats below Quebec.....	26,083 79
Tug Boats, upper St. Lawrence.....	24,054 71
Steamboat service, Lower Provinces.....	5,000 00
Removal to Toronto, in 1855	308 71
Trinity House, Quebec.....	12,486 06
Ottawa Survey and Surveys generally.....	29,593 12
Arbitrations	14,859 74
Removal of "Free Trader" wrecked at Port Stanley.....	40 01
Removal to Quebec, 1859	23,873 12
Administrator's removal in 1857.....	79 10
Northern Railway.....	* 60,000 00
	<hr/> 199,540 86
<i>Less :</i>	
Included in No. 1 Statement, and also, under the head of Arbitrations.....	1,801 75
	<hr/> 197,739 11

* This amount is included in and repaid by subscription of New Stock deposited with London Agents.

STATEMENT of the Expenditure incurred under this Department for the Repairs and Management of the Ordnance Canals for the year 1859, and the Gross Revenue therefrom for the same period.

N A M E .	Ordinary re- pairs and management.	Repairs Ordnance property.	Total Expenditure.	Gross Revenue.	Cost of Collection.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Rideau Canal.....	26898 79	.....	26898 79	10743 90	•
Carillon and Grenville Canal.....	5373 94	.....	5373 94		
Breach at Long Island.....	.....	599 77	599 77		
From Sundries.....	.....	.....	.....
	32272 73	599 77	32872 50	10743 90	

* The Tolls are collected by the Lockmasters, who account monthly to the Superintendent.

No. 6.

DETAILED STATEMENT of the Expenditure incurred in Repairs and Maintenance of Provincial Light Houses, for the year 1859, under this Department.

Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
		\$ cts.	\$ cts.	\$ cts.
Lachine Pier	John Norton	285 00	361 80	746 80
Light Ship No. 1	Pierre Landre	250 00	347 81	597 81
Do. No. 2	Benjamin Picard	250 00	361 04	611 04
Do. No. 3	Joseph Meloche	225 00	180 16	405 16
Beauharnois	Peter Shannon	435 00	*1237 04	1672 04
Grosse Point	A. McDonald	175 00	*1265 14	1440 14
Mackie's Point	E. S. Johnson	435 00		
Cherry Island	G. H. Johnson	125 00	945 60	1505 60
Do. Light Ship	Thomas Hill	335 00	414 85	749 85
Leicester Pier	Richard Elliott	140 00	201 17	341 17
Cole's Shoal	Joseph Austin	120 00	308 08	428 08
Granadier Island	J. W. Allan	140 00	200 06	340 06
Lindoe Island	Jas. McDonald	260 00	1081 25	1341 25
Oranorquo Narrows				
Jack Straw Shoals				
Spectacle Shoal				
Red Horse Rock				
Burnt Island	Daniel Bryant	560 00	275 43	835 43
	Joseph Mervin	120 90	190 00	310 90
	Lewis Wartman	103 75		
Snake Island	Geo. Lamb and		759 10	1190 14
	L. Herchner	322 29		
Five Mile Point	John Dunlop	435 00	*1913 48	2348 48
False Ducks	Joseph Swetman	510 00	717 00	1227 00
Point Peter	W. A. Palin	435 00	590 45	1025 45
Scotch Bonnet	Samuel Wilson	325 25	400 40	726 65
Presqu'Isle	W. Swetman, Sr.	325 00	*1677 05	2252 05
Do. Range Light	W. Swetman, Jr.	250 00		
Gull Island	George Roddick	435 00	450 75	885 75
Gibraltar Point	George Durnam	435 00	490 40	925 40
Burlington Bay	John Davidson	400 00	120 63	520 63
Oakville			99 50	99 50
Port Dalhousie	Jon. Woodall	325 00	500 20	825 20
Port Colborne	Jas. Fortier	400 00	500 67	900 67
Mobawt Island	John Burgess	435 00	700 34	1135 34
Port Maitland	Peter Baikie	435 00	300 32	735 32
Port Dover	Wm. Fifield		145 20	145 20
Long Point	H. H. Clarke	435 00	*2948 00	3383 00
Port Barwell	Alex. Sutherland	320 00	200 13	520 13
Port Stanley	Richard Ead	157 25	93 72	250 97
	W. J. Taylor	435 00	954 55	1714 55
Point Pelte	Jas. Edwards, Asst.	325 00		
Pelée Island	Jas. Cummins	435 00	*5924 75	6359 75
Des Blanc	Jas. Hackett	435 00	410 20	845 20
River Thames	Thomas Cartier	435 00	307 21	742 21
Goderich	H. Fidler	325 00	300 98	625 98
Point Clark	John Young	477 55	752 88	1230 43
	Thos. Kilty, Asst.	125 27		
	D. M. Lambert	435 00		
Chantry Island	Jos. Holmes, Asst.	207 70	880 40	1088 10
	Geo. Collins	435 00		
Isle of Coves	E. Collins, Asst.	58 10	1050 07	1608 17
	Wm. Milne	65 94		
	John Frame	270 41		
Smith Island	Vesey C. Hill	191 20	556 06	747 26
	D. McBeath	435 00		
Swansea Island	A. McBeath, Asst.	75 00	1018 05	1093 05
	John Merrill, Asst.	150 00		

No. 6.—A DETAILED STATEMENT of the Expenditure incurred in Repairs and Maintenance of Provincial Light Houses, for the year 1859, under this Department
—Continued.

No. 46	Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
			\$ cts.	\$ cts.	\$ cts.
	Christian Island.....	{ Wm. Hoare..... John H. Johns.....	435 00 209 00	496 51	1140 51
	Management, Salary of Superintendent and his travelling expenses, freight, and charter of Steamer delivering Supplies, Advertising, &c.			3916 03	3916 02
	Placing Buoys, Lake St. Francis.....			107 93	107 92
	Do. Lake St. Louis.....			61 00	61 00
	Do. Bois Blanc.....			86 63	86 63
	Keeping up Temporary Lights, Lake Huron, in 1855, 1856 and 1857...			1477 41	1477 41
	Purchase of Land for Light Keepers' Dwellings at Presqu'Isle.....			400 00	400 00
	Do. Burnt Island.....			100 00	100 00
	Do. McKie's Point.....			300 00	300 00
	Supplies on hand in Store.....			155 30	155 30
			10404 71	39199 02	55603 73

Under heading of Supplies and Repairs are included Works of permanent construction where needed, marked *

No. 7.

STATEMENT shewing the Total Amount expended under the Department of Public Works during the year 1859, as detailed in the foregoing Statements numbered 1, 2, 3, 4, 5, and 6.

S T A T E M E N T .		Repairs and Maintenance.	Construction.	Miscellaneous.	Total.
No. 1		\$ cts. 174346 76	\$ cts. 113622 61	\$ cts. 1801 75	\$ cts. 289771 12
2		643 50	17785 52		18429 02
3		42126 52	268227 73		310354 25
4		60000 00		137739 11	197739 11
5		32872 50			32872 50
6		55603 73			55603 73
		365593 01	- 399635 86	139540 86	904769 73

B.**PUBLIC BUILDINGS.**

REPORT OF MR. RUBIDGE, THE ASSISTANT ENGINEER AND ARCHITECT, ON THE FOLLOWING PUBLIC BUILDINGS IN CHARGE OF THE DEPARTMENT :

The Hon. JOHN ROSE,
Commissioner of Public Works,
&c., &c., &c.,

SIR,—I have the honor to Report, for your information, upon the following Public Buildings, and other works :—

PARLIAMENTARY BUILDINGS, TORONTO.

The Public Accounts of the year, shew an expenditure of \$542.75, for the supply of twelve walnut arm chairs, and desks, and new tapestry, carpet, &c., for the use of the additional members of the Honorable the Legislative Council, upon the requisition of the Honorable the Speaker.

POST OFFICES.**LONDON POST OFFICE.**

This public building, which presents a handsome front in the vicinity of the finest edifices in the city of London, is complete, both as to exterior and interior works; An extension of time was granted for providing the internal fittings, and the procuring plate glass for the fronts of the letter boxes from England. The building is now ready to be taken off the hands of the Contractor, and placed under charge of the Post Office authorities. The total outlay hitherto, inclusive of purchase of site, fitting up temporary Post Office. Advertising. Superintendence, &c., amounts to \$33,750.30.

HAMILTON POST OFFICE.

No disbursements have been included in the accounts for the past year, upon any works of reparation previously called for upon this edifice; but at the urgent solicitation of the Postmaster, resident in the building, several desirable improvements have recently been placed under contract, to the amount (authorized by Order in Council,) of \$785. These wants affect the safe keeping and preservation of the building, and are as follows:—18 pairs of iron shutters to windows, including painting; repairing the slate covering; and metal gutters of roof; introducing water pipes from the City Water Works; fixing hydrant within the building, as a protection against fire; 17 new winter sashes, glazed and painted; outside winter porches; two large wooden gates complete; and a portion of new wooden fencing, together with putting on new fastenings, bolts, locks, &c., to windows and doors.

KINGSTON POST OFFICE.

The expenditure that has taken place this year, on the above, has been the payment of the balance remaining over upon the contract and extra works, previously reported as complete, and for further fittings and furnishings required by the Post Office Inspector of the local division—inclusive also of the arrears of salary due to the Superintendent for his services,—in all \$3,077.43 chargeable against the appropriation. The unsightly remaining portion of the Old Jail and stone walls contiguous, have been disposed of, by auction, for a small sum, with the view of the materials being cleared from off the ground, and properly completing the fencing and inclosing the new Post Office.

TORONTO POST OFFICE.

A small outlay was incurred at the instance of the Post Office Inspector, for building a brick chimney, putting in new grate, mantel piece and stone hearth \$80.

POST OFFICE, MONTREAL.

A very general repair, and decided improvement in lighting the building, have been carried into effect within the past year, by removing the leaky roof covering of tin, and replacing it with one of gravel and felt—in putting new galvanised eavetroughs and flashings around the building—and renewing the rain conductors, constructing skylight, opening defective drains, altering the levels, putting in new pipes, and raising kitchen sink.

Three additional windows have been placed in the rear wall, to give light to the sorting office, general delivery office, hall, and stairway where previously gas was constantly required to be burning, in order to carry on the public business.—A new money order office has been partitioned off; a winter porch provided to side door; also the stopping and pointing up of the masonry; re-hanging window sashes—repairs of the plastered walls and ceilings, whitewashing and coloring the same, painting and general renovation.

The sum of \$2173 covers the total outlay, all of which, from having been so recently undertaken, will fall in next year's accounts.

QUEBEC POST OFFICE.

No outlay has been called for on the old Building, in present use as the City Post Office, up to the date of this Report, but on the 1st of June last, Plans and Specifications prepared by an Officer of the Department, and approved by the Committee of the Honorable the Executive Council, were laid before contractors in the Cities of Quebec and Toronto, for the erection of a new Post Office Building on the Grand Battery, the site being that of the former Parliament House, and held under lease by the Province from a late Roman Catholic Bishop of Quebec.

The intentions of the Government in constructing the Building were to adapt it for the accommodation of the Legislature in the City of Quebec, during the interim between the removal from Toronto, and the completion of the contemplated Public Edifices, to be erected in the City of Ottawa. The lowest tender received and accepted, was that of Messrs. Elliott & Melville, of Brantford and Hamilton, for \$32,730. The outside walls were to be built of red brick, &c., the particulars of which expenditure are, however, more fully detailed under the head of Parliamentary Buildings, Quebec.

For the purposes and wants of the local Post Office hereafter, it is believed the ground flat of the central building, will furnish more than sufficient room to accommodate the

Quebec Post Office, at a very moderate outlay for all the future alterations which may be called for, when vacated by the Legislature; while the site is central and convenient for the residents, and business men, having so frequently to resort thither.

CUSTOM HOUSES.

HAMILTON CUSTOM HOUSE.

In accordance with the requisition from the Minister of Finance, certain alterations in the interior arrangements of the new Custom House have been carried out, by changing the Long Room from the first to the second floor, and appropriating the first floor to the purposes of an Examining Warehouse, Appraisers, and Landing Waiters' Rooms.

The alterations above determined on, together with the death of the superintending architect, will have the effect of delaying the completion of the building, in all its requirements, until about the 5th of March next; the works remaining to be finished, being the pointing up the joints of masonry, grading and gravelling the yard, and some proposed improvement and extension of the drainage. The building will, however, be fully ready for the transaction of business by the opening of the navigation.

KINGSTON CUSTOM HOUSES.

The expenditure this year, in amount \$1,420.70, has been for the dwarf wall of cut stone, surmounted by an ornamental iron railing; also for a dividing fence of wood, the levelling and drainage of lot, together with sundry repairs to the office furniture, gas fittings, &c., consequent upon the late Collector, Mr. Hopkirk, taking possession of the new building.

Several urgent wants and improvements have been suggested recently by the officer of the Port, in order to remedy the imperfect draught of the Hot air-furnaces, to obviate damp over the Portico, the defective ventilation in roof, and other parts of the edifice, and to provide a Wood Shed, and an entrance door, or means of access to the yard from the basement; these demands, some of which had been previously recommended, are, upon examination, found necessary, and are estimated to cost \$1000.00.

TORONTO AND MONTREAL CUSTOM HOUSE.

No outlay has been incurred on either the Toronto, or Montreal Custom Houses.

CUSTOM HOUSE, QUEBEC.

This handsome edifice stands firm and secure upon its artificial foundations and is now far advanced towards completion. It will be handed over to the Collector on the 1st May next, for the future transaction of the business of the Port of Quebec; and the proprietor of the building leased for the present Custom House, has been notified that the premises will be given up on that date. Nothing remains to be done upon the exterior of the new building beyond finishing and cleaning up the fluted columns, laying the entrance steps towards the river and land fronts, the materials for which are now being prepared for laying, during favourable building weather in March and April. Some earth filling for the rear approach, and the formation of a macadamized road around the building, as called for in the specification, *remain to be completed.*

The plaster work of the interior, together with the joinery, are being rapidly pushed forward by the Contractor, who is also putting in the hot air furnaces, pipes, &c

The total amount by the last January Estimate returned for all contract and extra works was \$194,160, of which the amount paid thereon, was \$189,796

COURT HOUSES AND GAOLS.

NEW JAILS AND COURT HOUSES IN CANADA EAST

Under the Act of 20 Victoria, Cap. 44.

During the month of July last, the contractors for these Public Buildings, in thirteen several districts, received instructions to proceed with the erection of seven of their number, the sites for which had been approved of by His Excellency; and as the difficulties growing out of a choice among competing lots at the *chef lieu* of other localities were removed, the remaining Buildings were commenced from time to time, and have advanced to a greater or less state of forwardness up to the present. The two sites most recently decided on, are those of Sorel and Industrie, where the contractors are now engaged in providing and laying down materials preparatory to Spring operations.

The only unsettled selection of a building lot applies to the Town of St. Hyacinthe, where two or more sites come into competition, and, owing to the recent destruction by fire of the former Court House at this place, a prompt decision of the question at issue is now more than ever necessary.

The basis upon which these buildings were to be erected, required that in all the localities they were to be constructed of stone, and covered with slate, at the following rates, completed according to plans and specifications.

St. Scholastique	\$17,500	Rimouki	\$17,800	Nelsonville	\$17,900
Industrie	17,800	Montmagny	18,000	St. Hyacinthe	17,000
Sorel	17,600	Beauce	18,000	St. John	17,000
Malbaie	17,500	Arthabaska	17,600	Beauharnois	17,000
				Chicoutimi	17,600

ST. JOHNS.—Of this building, which is the most advanced of all those contracted for, the masonry and brick work are found to be unexceptionable in character, and are completed, excepting some outside pointing to the stone work, which is properly deferred until mild weather. The slates for the roof are about to be laid over a covering of felt; the metal eave troughs are fixed in place. The clay pipe drain which was reported indispensable to free the foundations from water, has been laid down to the River Richelieu, a distance of about 1000 feet. A large quantity of prepared flooring and other materials is on the ground, the window sashes and iron work are being delivered, and the whole progress of the works gives evidence of an early completion in the spring. The amount expended is \$10,514.52.

ST. SCHOLASTIQUE.—This site is very favorable for drainage, requiring no extra outlay for this object. The foundations are all in to a height of one course of the base above ground level, and the lower beams are fixed in position; a quantity of rubble stone is also on the ground, and most of the cut stone, now being prepared at quarries in the vicinity, will shortly be delivered. The contractor has likewise made arrangements for manufacturing bricks in the neighbourhood.

BEAUHARNOIS. This building, seated on elevated ground east of the village, has the masonry of the Court house carried up all round to the height of 13 feet, and the full wall to the sills of the first windows; about 70 tonnes of building stone, and 450 feet of cut stone are delivered; all the timber for joists, roofing &c., is at hand, as also some portion of the iron work; there are also furnished 200,000 bricks, and stone cutters are busily engaged at quarries, in providing more material, to ensure an early resumption of work in spring.

SWEETSBURG OR NELSONVILLE.—The exterior walls are all up to top of base course and the floor beams laid ; a lot of 1800 feet of cut stone for sills, jambs, quoins, &c., is now being transported to the site, and about 12,000 feet of timber are on the spot, also 73,000 bricks delivered.

The supervision of the four above described Court Houses has been put under the charge of Mr. Larose, who has hitherto made periodical visits of inspection to each, twice every month.

ST. HYACINTHE.—Pending any decision on the site to be acquired for the new Jail and Court House in this place, it became necessary, for carrying on the judicial business of the District, to do certain indispensable repairs to the old delapidated building known as the Court House of St. Hyacinthe ; and authority was obtained to make an expenditure thereon to the extent of \$605.

On the night of Tuesday the 23rd of August last, the repairs of the building being at that time nearly completed, and an outlay of \$490 having been made, a fire occurred in the wood shed of the Grand Trunk Railway Station immediately in rear of the Court House, the flames shortly communicated with the Court House contiguous, and ultimately destroyed that building, leaving only a quantity of rubble stone, brick, and other material fit for building purposes, valued at about \$400, and which may probably be transferred to the contractors, for the new edifice.

BEAUCÉ.—When the season for laying masonry terminated, the superintendent of the works was relieved from his duties until the ensuing spring, after first seeing the walls covered up and well protected against frost. The progress then reported, shews that the exterior walls have been carried up to the height of the belting course of the first story in a satisfactory manner ; and that the cedar sleepers are all delivered, and preparations made to collect materials during the winter months, for an active resumption of work when the weather will permit. The lot is reported to be susceptible of good drainage.

ARTHABASKA.—The works in this locality are reported by the superintendent last alluded to, who has also this second building under his charge, to have advanced favorably ; the masonry shewing two courses over the belt course of first story, and one course higher around the jail portion of the building. The cedar beams are all in position, and much material was at that time on the ground, including 50,000 bricks, a quantity of cut stone, floor joisting, iron doors, &c. ; and the supply was being increased by the contractors for the spring operations.

MONTMAGNY.—The walls are up to the height of four feet above the ground story beams ; the foundations, for which great fears were entertained, and artificial support requisite, being but little above the high water of the Rivière St. Thomas, have, up to the present, stood well,—the best means which the ground would admit of, having been taken to drain the lot.

The whole of the bricks required are stored under cover in the vicinity, and two excellent quarries are at present supplying all the stone to be used in the main walls. The ashlar having to be furnished from the vicinity of Quebec, for which, as well as for the timber, it is understood contracts have been entered into.

RIMOUSKI.—The foundations of this building, only commenced in the autumn, are up to the ground level all round, and are protected from frost until building operations can be resumed. To get rid of the water from the basement of the building, will require the laying down a pipe drain of 9 inches diameter, with a discharge into the River St. Lawrence, 750 feet distant, the estimated cost of which increased outlay is \$750 ; and, as it is found that in this neighbourhood, a covering of slate cannot long resist the violence of the prevailing winds ; and one of tin is speedily corroded by the action of the sea air, it is proposed to effect a considerable saving by using shingles as a covering, well painting the same, and applying the difference in cost in diminishing the extra outlay rendered indispensable by want of drainage.

As the building will be isolated, the danger from fire to the roof will be confined to the Court-house itself.

Of building materials, there are upon the ground, all the cedar beams, 340 lineal feet dressed stone plinth, and a few toises of rubble stone ; but contracts have been made by J. Sinclair and Skelsey for all the remainder of the timber, stone, and brick required.

MALBAIE—This Court-house has all the foundation walls and masonry laid up to the beltinz course of first story : the jail has been carried up to the height of one half the second story windows, with the iron gratings fixed in position.

The cedar beams of the ground floor are all laid ; 140,000 bricks are either in the work or on the ground ; the greater part of the floor joisting, about 40 tonnes of building stone, and much of the cut stone, have been delivered ; The roofing-boards, lathing, and sand are on the spot ; As also iron doors for safes, all the iron gratings, columns and girders for the jail and prothonotary's offices, together with clay pipes for drainage.

Difficulties having occurred between the sub-contractor and the foremen superintending the works, whereby unnecessary expenditure had been incurred, the Commissioner was under the necessity of dismissing two parties who had successively the charge of this building.

CHICOTIMI. The foundations are all in, with the exception of the jailer's basement ; the stone being at hand, and ready for laying.

A portion of the Court-house walls is two courses above the ground level. The masonry is well covered up for the winter, and much building material is in readiness for resuming operations in April next. The walls are based upon the solid rock, and facilities are afforded for proper drainage.

On the 14th January last, the materials returned on the spot, were, 2711 feet of cedar beams, 310 cubic feet of white pine for joisting, 700 feet of stone base or plinth course, 10 tonnes of rubble stone, 336 bushels of lime under shed, and 432 bushels of sand, and since the above date, a large quantity of materials in cut stone, rubble, timber, &c, have been hauled upon the ground.

NEW CARLISLE JAIL AND COURT HOUSE.

In the County of Bonaventure, the present Jail and Court House are inconveniently confined to a building of the dimensions of an ordinary dwelling house ; and upon an application from the Sheriff of New Carlisle, to the Executive Government, referred to this Department, a detached Jail of stone-masonry, the outside dimensions of which would measure thirty-six feet by thirty-five feet, has been recommended to be built to afford prison accommodation on a safer and more healthful arrangement ; and by which improvement the existing building could be converted solely to the use and occupation of the Court and its officers.

The estimated outlay for the new building, and alterations in the old one, amounts to \$4,508.

MAGDALEN ISLANDS—GULF OF ST. LAWRENCE.

The population of these Islands, judicially attached to the County of Gaspé, from their position in the open sea, require a separate local Court House and Jail, the nearest being at Percé, on the main land, distant about one hundred and forty miles. A plan and specification have accordingly been prepared for putting up a building of limited dimensions and cost, suited to the present wants of these Islands. By the estimate, it would appear that a stone building of the most moderate pretensions, consistent with any degree of security as a place of confinement, could not be erected for a less sum than \$2400. From well informed parties, it is understood a favorable site offers itself on Amherst Island, the most important of the Magdalen group, and possessing one of the best harbors.

Building stone and sand, it is ascertained, can be procured in the vicinity, but it will be advisable that all the timber, joinery, and iron work should be prepared, fitted, and framed, at any convenient port in Prince Edward Island, New Brunswick, or Gaspé, ready for putting together at the site selected ; and it has been suggested, as a means of economizing the expenditure, that the transport of these materials might be made in the Government schooner "*La Canadienne*."

MONTREAL COURT HOUSE.

The outlay upon this building, has been confined principally to Insurance, but includes, also, a sum of \$150 for additional steam pipes, to heat the Judge's Chambers, and other portions of the interior.

Upon a representation from the Prothonotaries, calling for certain precautionary measures against fire, and the better securing the valuable records contained in the vaulted basement, authority was obtained to provide iron frames and window shutters, and two iron doors to complete the fire-proofing in the basement, and also three other iron doors and frames in the party walls of attic, to cut off communication with other parts of the building.

Other requirements of the Prothonotary, since authorized, are, an iron railing in the record office, shelving in notarial vaults; closet and record case in judges' room estimated at \$460, the accounts for which, have not yet come in.

Very recently, an examination has been made, under this Department, into the dangerous state of much of the plaster work, heavy mouldings, and ceiling ornaments in the court rooms, vestibule, and other apartments. The Report of two professional gentlemen thereon, urges the necessity of strengthening the roof timbers, upon which the weighty ceilings are made to depend, bolting the massive trusses securely to the walls, securing the girders in the Criminal and Police Courts, and of generally repairing the plastered walls, surfaces, and ceilings, where required. These indispensable wants, not admitting of delay, are about to be proceeded with, to quiet the public apprehension on the subject. With reference to the contemplated improvements in the vicinity of the Montreal Court House, for which the sanction of the Executive was obtained at the close of the year 1858, under which, the Corporation of the City of Montreal were to remove the old Jail, in order to throw open the Jacques Cartier Square to the Champ de Mars, and to erect a *jet d'eau* in front of the building, it is expected they will shortly be commenced by the City Authorities.

As a preparatory step to the foregoing, the armory of the Montreal Active Volunteer Force, has been removed from the old stone Jail, (about to be taken down), and wooden racks for the small arms and accoutrements, have been provided in the drill-room, known as Victoria Hall, fronting on the Montreal Haymarket, and rented for the use and occupation of the Volunteer Corps. The outlay under this Department, to render the latter building more secure, and for the safe custody of so much valuable property, has been \$950.

Consent has also been given to the City Council, to erect a cut-stone Engine-house, near the south-east angle of the Court House, and within a defined limit; so that while contributing to the safety, it will offer no unsightly obstruction to the view of the neighbouring edifice. This Department reserves the right to have the Engine-house removed, without compensation, whenever so required.

The offices of the Registrar for the City and Island of Montreal, are now conveniently situated in the vaulted basement of the South-East wing set apart for this purpose: they are spacious and sufficiently lighted, and the records are here perfectly safe from fire.

SHERBROOKE COURT HOUSE.

The contract for general repairs and improvements, with some additional wants, embracing a total of \$3,225, was completed by the first of June last.

The outlay comprised the taking up and renewing the decayed sleepers and joisting of the ground story; raising and relaying the sunken floors with new material; rebuilding and altering the flight of stone steps at principal entrance; re-covering the roof with tin; taking down damaged plaster work, and restoring in perfect condition ceilings, walls, cornices, &c.; renewing the moulded skirting, flooring, window architraves, and other joiner-work wheresoever requisite, together with general cleansing and painting the interior. Also, putting up the front inclosing fence, entrance gates, &c. Nothing has been done towards remedying the bad state of the jail so frequently complained of, beyond a trifling

outlay in securing the roof from leaking, for the reason previously assigned in the annual Reports of former Commissioners of the Department.

THREE RIVERS COURT HOUSE AND JAIL.

The expenditure for the past year has been confined to newly covering the roof with tin, under a contract for the same; painting and sanding the projecting cornices and eaves; and amounts to \$1,112.38.

AYLMER COURT HOUSE AND JAIL.

The only payments on this building have been for some few reparations to roof, plumbing work, and pointing walls, &c. done in 1858—in amount \$18 65.

COURT HOUSE, QUEBEC.

This building continues in a fair condition, a small expenditure of \$50 only, has been incurred for securing better privacy for the Judge's Chambers, by shutting off the public from intrusion, and by a new door in the corridor, and window to light the passage.

MONTREAL JAIL.

The only outlay, under this Department, during the past year, has been a provision in the north wing for separating the female convicts from the crowded wards in other parts of the building, by flooring over the open corridors between the upper and lower tiers of cells; a small sum only was requisite for this essential improvement.

Proposals have been made to the City Corporation with the object of reducing the large annual tax for water supply to the Jail, by the future payment for the quantity made use of, to be estimated by metre, in lieu of a fixed annual rate.

Objections and difficulties, as to the size of metre necessary, (on the part of the Water Committee,) have hitherto delayed any satisfactory arrangement.

The labor of the prisoners has been usefully employed, during the summer, in constructing a new chimney, and other repairs, under the supervision of Mr. McGinn, the Jailer.

QUEBEC JAIL.

Plans, specifications, and estimates were prepared by the officers of the Department at the urgent solicitation of the authorities, for placing this delapidated building in a state of security and repair. The stone work, especially of the projecting portions forming the water closets in rear of the building, had to be propped and shored up to prevent their falling into the yard. All the wooden window frames were more or less rotten, the roof requiring to be staunched, the metal gutters and rain spouts renewed, and the drains having become choked up and offensive.

The estimated outlay, covering many other wants, was nevertheless, reduced to the sum of \$4653, by dispensing with works, not affecting the safe keeping or health of the prisoners, such as new fencing, cementing outside face-walls, painting, &c. Advertisements for Tenders were recently inserted in the public prints of the city, and authority obtained to commence the work.

Meanwhile the Board of Prison Inspectors for the Province having come into operation, and these gentlemen having had the competition Plans for a new jail in Quebec submitted to them by this Department, for their opinions, intimation was received that an early decision would be certainly arrived at, with the view to the erection of the desired new jail. Under these circumstances the expenditure of so large a sum as \$4653 on the old building was recommended to be deferred, if not altogether dispensed with.

The Board of Prison Inspectors have, however, suggested a small outlay to take place in the spring for improving the sanitary state of the Jail, by opening and cleaning drains and closets, which may require about \$200 to be spent for these desirable objects.

In the event of the new jail being shortly built, it will be imperative that the long pending question between the Provincial Government and the military authorities, respecting the proposed exchange of land known as the Bonner property, for other land, as the site of the new jail, in order not to interfere with the defences of Quebec, should be brought to an early issue—and communications on the subject have been resumed with the Ordnance Department.

KAMOURASKA JAIL.

A contract was entered into with Charles Touchette, for the construction of a new jail, to be attached to the present Court-house, originally an ordinary dwelling house; This jail was imperatively called for, owing to numerous public complaints respecting the smallness, insecurity, and unhealthiness of the cells in the basement of the old building. The cost of a new wing of substantial stone masonry, upon the lowest tender, with some extra expenditure upon the foundations, amounted to \$8,100.

The stone walls, from a recent examination, are reported to be of good workmanship, and are completed; the roof timbers and boarded covering, are also ready for shingling, but the brick work has suffered materially from exposure to frost, and the arches of the cells must be rebuilt.

To carry off the water from the basement, which has given rise to the injury above complained of, the construction of a drain, partly in rock, is indispensable.

The preparations of materials of all kinds to complete the building by the first of June, are being proceeded with.

The jailer's dwelling adjoining the present court house, being inconveniently small and insecure against the weather, this officer has been allowed to rent a house for his family during the winter, until this want can be remedied.

The expenditure to the present time amounts to \$5,074.04.

BONNER PROPERTY.

Upon this property there are two tenements of wood, from which the Government have drawn a rental, respectively of \$60 and \$240: the latter includes the farming land of about 38 acres. A portion of this rental has not been received during the past year, from the inability of the party to pay arrears: it is therefore intended to take legal steps to eject the present tenant, and to lease the property to others offering sufficient security for future payments.

TORONTO BARRACKS.—NEW FORT.

Under the Act 18 Vic. cap. 91, the Governor in Council is empowered to place in class B, such portions of the Ordnance estates enumerated in the second schedule, as his Excellency may deem fit for the purposes of the Government, and for keeping in repair the lands and property retained for the defence of the Province. The Toronto Barracks, occupied with the latter object, and having been placed in Class B, authority was obtained to expend \$108.00 in improving the sewerage, and other necessary repairs to outbuildings. These works have therefore been carried into effect.

QUEBEC ARMORY AND GUN SHED.

In consequence of the Store keeper in charge of the Armory having to vacate the apartments occupied by him in the building on the Esplanade fitted up recently for the apartment of the Honorable the Post Master General, application was made by the Colonel commanding the active Militia force at Quebec, for accommodation being provided near the gun shed in rear of the General Post Office, as a residence for the Serjeant in charge. This Expenditure, covering \$117.80, consisted in partitioning off a portion on one end of the Armory, plastering and securing it against the winter ; all of which have been completed.

Upon the gun sheds at Toronto and Hamilton the only payment has been for outstanding claims against the latter building, amounting to \$55.85.

MARINE HOSPITAL.

The wharves and landings surrounding the Property have been either completed or at in a thorough state of Repair.

The extensive wooden building in rear, intended as a Fever Hospital, has been finished in its outside requirements, such as clapboarding, painting, putting in windows and hanging entrance doors; but the interior wants, as flooring, plastering, joiners' work, remain to be done.

This building is required for the isolation of infectious cases that are now lodged in the Main Hospital.

By a recent examination of the Furnaces and hot air pipes for heating the new wing, the necessity of securing them against accident by fire in a more satisfactory manner, to meet the views of Inspectors and Insurance agents, became apparent. The cost of these precautionary measures will be \$200.

It is found also that the timbers and flooring supporting the water tanks in the attics, have, owing to leakage, become decayed and dangerous, and an expenditure of \$60 has been authorized to restore whatever may be defective.

The expenditure for the past year amounts to \$1638.80

GROSSE ISLE QUARANTINE STATION.

Nothing has been done in new works, or repairs of existing buildings, during the past year ; the outlay called for being postponed for the present.

LANDING PIERS, NORTH AND SOUTH SHORES OF THE RIVER ST. LAWRENCE.

All the Landing Piers were in good condition when last examined, with the exception of that at Malbaie on the North Shore, upon which an Expenditure of \$314 has taken place, in repairing and sheeting with hardwood plank the outer angles of the Pier head, and in bolting on new fenders in place of those carried away by the running ice ; as well as re-filling the piers, from which the stones had been washed by the force of the sea.

This Pier, not having been originally raised sufficiently above high water, the waves have recently displaced a portion of the filling above described, and it will be requisite to lay plank over the full width of the Pier in place of the present covering of Macadamized stone, the cost of which would not exceed \$400.

NORMAL SCHOOL, MONTREAL.

Various reparations and improvements have been effected upon the buildings occupied by the Normal and Model Schools in Notre Dame Street, comprising the raising the

ceilings of the Lecture Halls, Schools and Class Rooms, &c., which were performed by contract; and the disbursements for the year, including a previously unsettled claim of a former Clerk of the Works for supervision, amount to \$935.75.

NORMAL AND MODEL SCHOOL, QUEBEC.

Prior to the removal of these educational establishments from the old Castle of St. Lewis, to make room for the Crown Lands Department, an expenditure of \$110.02 had been incurred for ordinary carpenters' repairs, painting, &c., and, upon the Government leasing the new stone building from the Pères Jesuits, in St. Ursule Street, for the Normal School, it became necessary to make numerous alterations and fittings, and to lay on water and gas, upon requisitions submitted by the Superintendent of Education for Canada East, in order to adapt this building to the wants and accommodation of the Laval Normal School. These works have accordingly been carried to completion, and their cost is included and embraced in the yearly sum for rents and repairs of public buildings.

SPENCER WOOD.

Considerable repairs were required, owing to the perishable character of the wooden buildings which constitute the larger portion of these premises, as well as from the Residence itself having been untenanted during an interval of four years.

Instructions were, nevertheless, given to confine the prospective wants and reparations within the most economical limits. To prepare the buildings for the reception of his Excellency the Governor General, a memorandum of sundry alterations and improvements had been furnished, by which the interior convenience of Spencer Wood as a Family Residence was increased, and access greatly facilitated from one portion of the Building to the other, in providing new sleeping apartments, additional passages, bath rooms, &c., freshly papering halls and chambers, and painting the suite of State Apartments.

These necessary Repairs have entailed an expenditure of \$4,299.35.

PARLIAMENTARY BUILDINGS AND NEW POST OFFICE, QUEBEC.

In compliance with instructions, the proper officer of the Department proceeded to Quebec in the month of April last, with the view of reporting upon the accommodation offered in that City for the ensuing meeting of Parliament; this duty obliging him to inspect the large buildings known as the Laval University, the Jesuit Barracks, the Music Hall, in St. Louis Street, with adjoining properties; and the New Market Hall, built by the City Corporation, at the Cul de Sac, Champlain Street. Upon the facilities afforded by each of which, a Report was received, dated April 4th, 1859.

On the twentieth of the same month, an estimate was also submitted by that officer, in pursuance of instructions, for erecting plainly constructed buildings, faced with English fire-brick, but with temporarily constructed wings of framed wood-work (which might, if required, be removed hereafter), to occupy the site of the former Houses of Parliament, in possession of the Government, on the Grand Battery, Quebec. The estimated expenditure, including the approximate cost of all "necessary fittings-up, for the meeting of the Legislature," amounted to Sixteen Thousand Pounds. The central portion of the buildings was thereafter intended to become the City Post-Office, as had been recommended.

In accordance with the authority of Council, plans and specifications were prepared with the utmost dispatch, and placed before the public for competition tenders, upon the 10th of June last. The outlay upon the block of buildings, including the proposed wings, was, however (exclusive of furnishing and fitting up), restricted, by order of the Government, to £12,500, and the entire building was to be constructed of Canadian red brick.

Twenty-five tenders were received, ranging from £8,192 10s.,—the lowest,—to £14,376, the highest amount; and a contract was forthwith entered into with Messrs Elliott and Melville, of Canada West, offering the lowest tender, to erect the buildings complete for the former sum. From the low rate at which the contract had been taken, (owing to the dearth of employment, and a reduction in prices of materials,) it was afterwards decided to substitute English fire-bricks, for Canadian red bricks, as a more durable facing for the exterior walls, in addition to which, and in order to comply with a Corporation Bye-law, interdicting the use of clap-boarding on the outside of buildings, the rear and flank elevations were coated with cement, and painted with oil paint in lieu of weather-boarding, as specified; and where not affected by frost, owing to the lateness of having been put on, this surface coating is found impervious to the weather, in this very exposed position.

The heating with Mills Patent furnaces; the requisite plumbing and water-closets, the brass-fitting and gas-work; the upholstery, renovation, and fitting up of the old furniture, hanging bells, laying on water, &c., together with a plain inclosing wooden fence, and planked walks, collectively, have been confined nearly within the limits of the sum first contemplated, namely, £12,500.

The buildings are sufficiently substantial for the objects called for in their erection, affording it is believed, the best accommodation in all their interior arrangements, that the limited foundation walls and site would admit of. The superficial area or ground covered by the Parliamentary Buildings in Toronto, as compared with the extent of space occupied for the same purposes on the Grand Battery, brings as 34,800 feet, in the first locality, to 17,250 feet in the last named place, or double the space. Increased accommodation can at any future time be obtained at the pleasure of the Legislature, by adding another story in height to the present wings, but the intentions of the Government have been fulfilled by the Department, in restricting the cost to the lowest possible sum.

All such fittings, cloth doors, desks, carpets, gaseliers, bells, and furniture generally, removed hither from Toronto, which could in any way be adapted to their new position here, have been made use of; but with the greatest desire and efforts to ensure economy, many new articles in the simplest style of decoration have been found indispensable for the Chambers of the two Houses. The whole construction and preparations having been energetically pushed on to completion, are ready for the opening of Parliament on the 28th instant, within a period of about seven months from the time of laying the first brick upon the walls.

The payments to the close of the year expired, appear in the Appendix to this Report.

DEPARTMENTAL BUILDINGS, QUÉBEC.

Preparatory to the removal of the seat of Government from Toronto to Quebec, the buildings sought to be rented from private individuals in the latter city, for public offices, were after long negotiation, secured in the most central and desirable localities. They may be enumerated as follows:—

The Department of the Finance Minister, the Customs and Audit Branches, located in the dwelling house of Mrs. Leaycraft, on Ste. Geneviève Street, at an annual rental of £225.

The Department of Public Works, occupying a house rented from Henry Chapman, Esquire, on the corner of Ste. Geneviève and Des Carrières Streets, annual rental of £150.

The Receiver General's Department, and the Bureau of Agriculture, being accommodated in two houses rented from the heirs Jones, and forming the corner of Haldimand and St. Louis Streets, annual rental, £300.

The Honorable the Executive Council, the Provincial Secretary, the Honorable Attorneys General, East and West, and the Superintendent of Indian Lands, have all their offices in St. George's or Union Buildings, fronting the Place d'Armes, leased from the heirs Sewell, at a yearly rental of £450.

The office of the Adjutant General of Militia, held at the house No 33 St. Louis St., at an annual rental of £70. Until the officers and clerks had taken possession of the Parliament Buildings, a portion of the Music Hall in St. Lewis St., and a private dwelling on the Cape, rented from Mr. Stayner, were taken for the use of the Assembly and Council branches of the Legislature.

The remaining Departments were accommodated in buildings belonging to the Provincial Government, as follows. The Post Master General's Department, in what was formerly the residence of the late Chief Justice Sewell, on the Esplanade.

The Crown Lands Department, and the office of the Provincial Registrar, occupy the Old Château or Castle of St. Louis, vacated by the Normal and Model Schools of Quebec.

In fitting up what were heretofore mere private abodes, affording, in frequent instances, too limited an extent of office room for the large number of *employes*, and the annually increasing documents and records of the Province, every effort was made to keep down the expenditure.

Upon the building tenanted by the Executive Council, and the Receiver General's Department, but little outlay was called for. The first mentioned premises being put into a fair state of repair by the proprietors, as one of the conditions upon which the Commissioner consented to rent the same. The notarial leases for these buildings, as well as the others alluded to, are made to cover one or more years' tenancy, at the option of the Government. The expenditure up to the 1st January last, from the books of the Department, shew, on St. George's buildings, \$176.50; on Jones' Buildings \$454 25.

Upon the office of the Department of Minister of Finance, the expenditure refers chiefly to the partitioning off and sub-dividing rooms into the required number of offices, and providing a dwelling for the office keeper,—outlay \$969.81. Upon the premises occupied by the Department of Public Works, it was found necessary to raise the ceilings of the attic chambers, and newly partition off the apartments for the clerks, also to convert the stabling in rear into additional offices, and lodgings for the guardian and messenger; the two brick stories raised thereon being severally in use as the map-room and Engineering branch, and also forming the private office of the Honorable the Minister of Finance, and communicating with his department adjoining. The outlay has been \$2,047.07.

The Department of Crown Lands, and office of Provincial Registrar, from the numerous wants, arrangements, and alterations for their staff, have incurred an outlay of \$1,043 .36. These, together with the private offices of His Excellency the Governor General and Aides de Camp, occupy the same building.

The General Post Office, on the Esplanade, has been thoroughly repaired by providing new floors, window sashes, and frames, newly plastering walls and ceilings, and coloring and whitewashing the plastering; painting and repairing all wood-work, &c. New chimnies and repairs to roof, eave-troughs and rain water pipes; and, further, erecting a brick wing in rear, to give extra offices, and building up brick fire-proof safes attached to the side. The works being wholly performed by contract at an outlay of \$2,623.72.

All of which is respectfully submitted.

F. P. RUBIDGE.

A. E. P. W.

C.

FROM THE SUPERINTENDENT OF THE WELLAND CANAL, FOR
1859.

WELLAND CANAL OFFICE,
St. Catharines, 20th December, 1859.

SIR,

I have the honor to submit herewith my Report of the works upon this Canal, as required by your letter, No. 29,896, of the 3rd instant. These works are designated as follows, viz:—the first being that of Construction, and paid from the appropriations made by the Legislature; and the second, works of Maintenance and Repairs, which are paid from Canal Revenue.

WORKS OF CONSTRUCTION.

The works authorized and in progress, comprise the enlargement of the portion of the Canal between Allanburgh, and the rock cut at Ranney's Bend, a distance of $12\frac{1}{2}$ miles. Being that, which requires widening and deepening, to admit of Lake Erie being adopted as its summit level.

Throughout the past season, there have been four Steam Dredges, or Excavators, employed upon this work, and the necessary excavations, above the water surface, have been completed, through the means of laborers and teams.

The operations of these dredges have been principally confined to completing the Canal south of the junction, for a distance of about 5 miles, as also operating north of the aqueduct for a distance of about one mile, thereby enlarging the dimensions of the Canal to 50 feet width of bottom, at the level of the mitre sill of the old lock at Port Colborne, and increasing its depth one foot below this level, being that of the rock cut bottom.

WORKS OF MAINTENANCE AND REPAIRS.

Previous to the Canal being opened, a sudden freshet from the Twelve Mile Creek caused an overflow of water, by which the Canal Banks were materially injured, and the stuff washed therefrom deposited in its channel. The disastrous characters of the floods, brought down by this Creek annually, have been already reported on repeatedly, and on this, as well as on former occasions, every precaution was taken to guard against them as far as practicable. Otherwise the consequences would have been far more disastrous. Before the navigation could be opened, it was necessary to repair these damages, and remove the obstructions.

The Canal was opened, and vessels were passing on the 1st April. It was closed by frost on the 8th December, making 252 days of navigation, (inclusive of its interruption) from its opening to its being closed.

The navigation was twice interrupted, viz:—first by a vessel breaking the gates of lock No. 7, on the 30th of April, which caused a detention of 3 days. Again on the 16th June, the gates of lock No. 25 were carried away by the "Quebec" of Kingston. In consequence of which the navigation was suspended 8 days, as the great rush of water, from the long level above that lock, produced several large breaches in the Canal embankments, as well as occasioning considerable other damages. In making the repairs for resuming the navigation, a large amount of labor and expense was necessarily incurred, and consequent delay caused.

It has been suggested, to prevent a like recurrence, that a guard lock be constructed above lock No. 25. Its probable cost will be \$19,000; an additional expenditure of \$1,500 will be necessary, in widening the channel above it, to afford lay by room for vessels.

By a severe storm (in March last) upon Lake Erie, the Piers at Port Colborne and Maitland, were considerably damaged;—the necessary repairs were effected in due course. The amount expended upon these repairs, is shewn in the Schedule. Again on the 26th of November, as was at the time specially reported, they were materially injured through the same cause,—the repairs are not yet made.

But sums are included in the estimate for making them, as well as providing materials, &c., for an increased height, to prevent the possibility of a similar result.

The *Schedule of Expenditures*, made upon the *Repairs*,—shews the amount expended providing spare Lock Gates, to meet casualties, as well as protecting and raising the al embankments, &c., to admit the passage of vessels, drawing 10 feet of water.

Schedules Nos. 1 and 2—shew the several appropriations made by the Legislature, with expenditure to 1st December, 1859.

A appropriation of \$60,000 will be required to prosecute the necessary Dredging operations in widening and deepening the Canal—above Allanburgh—during the year 1860.

Schedule No. 3—gives the cost of maintenance and repairs of the Canal for this year.

These expenditures have been paid from the tolls :—

The cost of management is	- - - - -	\$34,442 22
Do. of repairs	- - - - -	35,336 36

Total management and repairs - - - - - \$69,778 58

The Expenditure for Management and Repairs shewn in the *Detailed Schedule*—On this \$17,791 24 has been expended upon repairs of breaches done by vessels, damages done to the piers by storms, and making repairs of damages occasioned by flood water.

Schedule No. 4—gives the water power, and other property leased to this Canal, with the erections, &c. :

The annual rent is	- - - - -	\$ 8,621 08
The amount paid in 1859 is	- - - - -	10,545 91
The balance remaining due to 1st instant	- - - - -	7,633 99

All necessary and due exertion has been made in endeavoring to collect the rents, and towards the collecting of the arrears proper action is being taken.

Schedule No. 5—shews the land disposed of not required for Canal purposes.

Schedule No. 6—gives the vessels and other property upon which penalties have been imposed in consequence of the infringements of Canal Regulations.

Schedule No. 7—gives an approximate estimate of the probable cost of making the repairs for 1860, amounting to \$20,000, including the construction of 8 gates for the Mountain Locks, and that for repairs, and raising of piers at ports Colborn and Maitland, and construction of 6 gates for the Allanburg and Port Robinson Locks, \$17,000.

Appended is a Statement shewing the Revenue of this Canal for the last 3 years.

Being from the Tolls last year \$124,145 78, less by \$83,625 74 than its Revenue for 1858 ; 1,137 more vessels passed through the Canal in 1858, than during 1859.

The foregoing, with the accompanying Schedules, affords, I trust, all the information required.

I have the honor to be,

Sir,

Your obedient servant,

(Signed,)

S. D. WOODRUFF.

To the Secretary of Public Works Quebec.

WELLAND CANAL.

Table of its Revenue for the last three years

	1857.	1858.	1859.
	\$ cts.	\$ cts.	\$ cts.
Collected at Colborne.....	161,319 91	133,219 20	81,305 63
Do. Robinson.....	4,514 13	3,521 27	2,804 20
Do. Maitland.....	3,465 62	1,426 33	1,152 29
Do. Dunnville.....	3,636 62	2,461 88	3,667 33
Do. St. Catharines.....	2,896 66	1,668 47	1,251 78
Do. Dalhousie.....	57,204 44	45,444 37	33,964 55
	232,437 38	207,771 52	124,145 78
Collected on Rents.....	9,021 07	13,068 19	10,545 91
Do. Land Sales.....	539 00	804 56	200 00
Do. Fines and Damages.....	595 00	947 29	4,176 82
	242,592 45	222,591 56	139,068 51

WELLAND CANAL.

SCHEDULES 1 TO 7.

Expenditure and Works of Maintenance and Repairs—Annual
Rents of Water Power—Lands sold and Leased—Fine
and Damages—and probable Cost of future Repairs.

WELLAND

SCHEDULE No. 1.—Shewing the several appropriations with the Expenditures (Estimate for work done in month of November included,) together with forth, with the amount of £76,715 voted thereon.—The balance required

WHAT WORKS.		Amount of Estimate voted.
For the several Works enumerated in previous Report, now completed, and the amounts corresponding with last year's Report.....		£ s. d. 126338 4 5
SCHEDULE No. 2		
<i>Shewing the Estimates to complete the several Works set forth with the Amounts appropriated for the same and the Balance required to be appropriated to complete them.</i>		
Basin below Lock at Colborne.....	£18200	
Collectors' offices and residences, Ports Robinson, Maitland and Dunville	2500	
Raising Locks	4000	Appropriated in 1854, 18 V. c. 4, \$58340
Finishing deep cut to 50 feet bottom, sections Nos. 15 and 16...	39420	
Sections 17 to 26, widening to 50 feet bottom.....	64554	
Extension of south end east pier at Dalhousie.....	3000	
Superintendence and contingencies.....	14021	in 1858, 22 V. c. 22, 12500
For second towing path on east side of Canal from Hunt's Bridge to Marlatts.....	4525	
For Culvert at Brown's ditch.....	2750	
For ditching on the feeder.....	1000	
For bottoming Canal above Thorold.....	500	
For lands and other damages.....	7400	in 1859, 22 V. c. 13, \$5875
For enlargement of harbour at Dalhousie and pier work, clearing out basin.....	12500	
Do. at Colborne and do. on south-east side.....	16000	\$76715
Do. do. and do. on south-west side.....	6250	
Guard gates at Thorold.....	5125	
Raising banks for increased accommodation and for raising piers at Ports Colborne and Maitland.....	3763	
Total value of the foregoing proposed works.....	£204568	76715 0 0
Amount of the same voted		204053 5 5
in 1854.....	£58340	
1858.....	12500	
1859.....	5875	
Amount required to be appropriated to complete the several works enumerated in Schedule No. 2.....		\$127853

Welland Canal Office,
St. Catherines, 20th December, 1859.

CANAL.

made on the Welland Canal for works in progress ending 30th November, 1859, **SCHEDULE** No. 2, shewing the several Estimates to complete the works set to be appropriated to complete the works set forth is £127853.

Amount of Estimate voted.	Amount expended to 1st Jan., 1859.	Expended from 1st Jan., 1859, to 1st Jan., 1860.	Total Amount expended to 1st Dec., 1859.	REMARKS ON WORK.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	
.....	503133 36	.....	503133 36	
.....	65697 40	.....	65697 40	Completed. Balance of this Estimate applied upon payment of Lands acquired.
.....	16000 00	.....	16000 00	Completed.
306860 00	141166 90	42650 00	183816 90	In progress.
.....	10025 26	.....	10025 26	do.
.....	34818 25	4497 50	39315 75	Completed.
.....	.....	1581 75	1581 75	
306860 00	267707 81	316437 06	48729 26	
812212 89	770841 17	819570 42	48729 82	\$7357 53 excess of Expenditure over Appropriation.

(Signed,) S. D. WOODRUFF,
Superintendent Welland Canal.

SCHEDULE NO. 8.—Detailed Schedule of the gross amounts of Monthly Expe

	Sheet No. 1. Division No. 1. Office Establishment, Clerk, Paymaster, &c.	Overseers, Lock and Bridge Tenders, Har- bour Masters.	Lighting Canal with Gas from Lock No. 2 to No. 25 inclusive.	Oil furnished for lighting other parts of the Canal, not lighted with Gas.	Advertising list of vessels passed through Canal, Printing, Postage, Stationery, Telegraph communications, Office Fur- niture, Fuel, &c.	TOTAL AMOUNT OF MANAGEMENT.	Repairs of Bridges.
1859.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
January	132 00	946 50			10 00	1088 50	
February	132 00	1135 87			4 71	1272 58	
March	132 00	1895 13		110 12	107 32	2244 57	
April	132 00	3204 00		321 87	19 20	3670 13	
May	132 00	3187 50				3319 50	76 37
June	132 00	3148 12		106 88	165 46	3542 46	
July	132 00	3142 00	2232 84			5506 84	35 91
August	132 00	3148 37		260 00	15 43	3553 80	
September	132 00	3129 50		107 85	85 45	3454 75	214 97
October	132 00	3132 75		211 88	12 00	3488 63	
November	132 00	3142 62			14 84	3289 46	
	1452 00	29214 36	2232 84	1118 55	424 47	34442 22	327 24

Of the above expenditure for Repairs, amounting to

There has been expended upon Repairs of Damages done to the Piers at Port Colborne by stor
Do do do do do do
Do do do do do Port Maitland do
Do do do do by the "Mohagan," of Detroit, by breakin
Do do do do by the "Quebec," of Kingston, in breakin
Do do do do by the "Typhoon," of Milan, in breaking
Do do Replacing two Gates at Lock No. 1, partly from old material
Do do Repairs of Damages caused by flood water, as reported to y
Do do in constructing four extra Gates for Colborne Lock, 3,174

The Balance of Expenditure upon Repairs has been upon Lock Gates, Bridges, Canal Banks, &c ...

Welland Canal Office,
St. Catharines,
20th December, 1859.

on the Management and Repairs of the WELLAND CANAL, ending the year 1859, December.

Castings and Iron Works for Bridges, Lock Gates, &c.	Lumber and Timber furnished for constructing Lock Gates and Bridges, and Repairs of same.	Raising, Repairing Embankments, Scow-ing Clay and Gravel for raising and facing Embankments, Dredging, &c.	Repairs, Piers at Port C. Iboune.	Repairs, Piers at Port Maitland.	Sundry Materials furnished, Paint, Oil, Spikes, Nails, Rope, Shovels, &c.	Repairs, Bridges and Waste Weir at Dunn ville and Sulphur Creek.			TOTAL AMOUNT OF REPAIRS.	TOTAL AMOUNT OF MANAGEMENT AND REPAIRS.
\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	cts.	\$ cts.
457 00									682 06	1770 56
221 62									794 99	2067 57
624 20	491 50	1444 60							3257 19	5501 76
521 07	178 05	1200 42	900 00		125 80				3393 54	7072 67
482 64		1095 36	1729 80		126 24				3907 36	7226 86
1337 70	103 98	4271 56		3446 59	237 48				10376 99	14919 45
707 92	72 41	1834 59			93 28				3344 21	8851 05
247 48		2068 68			47 90	1673 77			4780 24	8336 04
329 30	313 73	749 25				1077 71			2684 96	6139 71
393 09	25 53	496 16	100 00		96 86				1111 04	4600 27
419 45		553 73							1003 16	4292 64
5741 47	1185 20	13834 35	2739 80	3446 59	727 86	2750 48			36336 36	69778 58
								36336 36		
March, 1859								2629 80		
October, 1859								100 00		
March, 1859, Gates, Repairs, Banks, &c.								3446 59		
Lock No. 7, on 30th April, 1859, including eight new								1953 00		
at Lock No. 25, on 16th June, 1859, including eight new								5953 00		
at Port Robinson, 27th August, 1859.								208 85		
								600 00		
19th March, 1859.								3600 00		
Expense Gates for Mountain Lock, partly from old materials, \$421 00.								3600 00		
								13345 12		
TOTAL								35836 36		

(Signed,)

S. D. WOODRUFF,
Superintendent,
Welland Canal.

WELLAND CANAL.

SCHEDULE No. 4.—Statement shewing the Annual Rents of Water Power leased, and the Rents of other property situated on the line of the WELLAND CANAL, with yearly Rent, together with arrears of Rent, the Amount of Payments made in 1859, with the Balance due the 1st December, 1859.

Where situated.	OWNERS.	Description of Machinery.	Yearly Rents.	Amount of Rent with Arrears, to 1st July, 1859.	Amount of Payments to 1st Dec., 1859.	Balance due on Rents to 1st Dec., 1859.	REMARKS.
Port Dalhousie ...	Robert Laurie & Co.	Grist Mill.....	\$ cts.	\$ cts.	\$ cts.	cts.	
do	Robert & J. Laurie.....	Grist Mill.....	197 30	294 95	295 95		
do	Robert & J. Laurie.....	Lot 1 more land	240 00	380 00	380 00		
do	Reuben Morrison, now Sampson, Smiley estate.	Saw Mill.....	20 00	30 00	30 00		
do	Alex. Muir.....	Floating Dock.	137 00	137 00		137 00	Water shut off. In hands of Solicitor for collection.
do	Donaldson, Andrews and Ross.....	Dry Docks	78 00	78 00			
do	Jas. Mavor, now John Johnson.....	Lot.....	100 00	100 00			
do	George A. Clarke.....	Wharf.....	20 00	20 00		20 00	In hands of Solicitor for collection.
do	John L. Ranney, Now Bank of Upper Canada.	Grist Mill.....	80 00	80 00	80 00		
Lock No. 2.	Water Power Company.	Surplus Water from Lock 11 to 2.....	260 00	260 00	130 00	130 00	Mill burnt. No water used.
St. Catharines ...	Calvin Phelps, now Bank of Upper Canada.....	Grist Mill.	500 00	500 00	500 00		
do	Calvin Phelps, now Bank of Upper Canada.....	Wharf Lot	150 00	450 00	375 00	75 00	
Lock No. 4.....	Richard Collier.....	Saw Mill.....	40 00	100 00	80 00	20 00	
Lock No. 5.....	Thomas Towers, now Brownlee and Stinson.....	Grist Mill.....	167 66	335 33	335 33		
Lock No. 10.....	Oregon Phelps, now assigned to Welland Canal Loan Company	Saw Mill.....	140 00	280 00	280 00		
Lock No. 12.....	Welland Canal Loan Co.....	Saw Mill.....	124 00	186 00	186 00		Welland Canal Loan Co.
Lock No. 22 to 11	Welland Canal Loan Co.....	For surplus water passing through Welland Canal, with stipulations.	360 00	360 00	360 00		
Lock No. 15.....	John Brown.....	Grist Mill.....	160 00	160 00	160 00		
Lock No. 20.....	W. B. Henderhot.....	Saw Mill.....	181 00	181 00	181 00		
Lock No. 21.....	William Beatty.....	Saw Mill.....	216 00	216 00	216 00		
Lock No. 23.....	W. H. Ward, now Commercial Bank	Wheel grinding Bark.....	63 60	63 60	63 60		
do	W. H. Ward, now Commercial Bank	Saw and Planing.....	50 00	125 00		125 00	Insolvent, and water shut off.
do	W. H. Ward, now Commercial Bank	Saw Mill.....	140 00	365 00		365 00	Insolvent. Water shut off.

WELLAND CANAL.

SCHEDULE No. 4.—Statement shewing the Annual Rents of Water Power leased, &c.—(Continued.)

Where situated.	OWNERS.	Description of Machinery.	Yearly Rents.	Amount of Rent with Arrears to 1st July, 1859.	Amount of Payments to 1st Dec., 1859.	Balance due on Rents to 1st Dec., 1859.	R E M A R K S.
Dunville.....	Chisholm & Minor, now Bank of Upper Canada	Saw Mill.....	cts. 138 67	cts. 138 67	\$ cts. 138 67	\$ cts. 138 67	Water shut off. Mill burnt. No water used.
do	A. S. St. John, now T. C. Street.....	Grist Mill.....	120 00	900 00	.....	900 00	
do	John Brown & W. H. Merritt.....	Grist Mill.....	113 00	113 00	.....	.....
Haldimand	John Oldfield & A. Nixon.....	Saw Mill.....	237 34	474 67	113 00	474 67	
do	J. Clarke & Brothers, now T. C. Street.....	Saw Mill.....	66 67	66 67	474 67	66 67	
do	J. C. Kirkpatrick, formerly Levi Brocklebanks.....	Grist Mill.....	153 34	153 34	66 67	153 34	
do	John Belly & R. Bands.....	Grist Mill.....	149 20	373 00	153 34	373 00	
Port Colborne	John Gordon	Wood Yard.....	25 00	37 50	373 00	37 50	
do	A. & K. Schofield, Great Western Railway	Wharf Lot.....	25 00	50 00	37 50	50 00	
			8621 08	18179 90	.....	50 00	
					10545 91	7633 99	

(Signed,)

S. D. WOODRUFF,
Superintendent,
Welland Canal.

WELLAND CANAL OFFICE,
St. Catharines, 20th December, 1859.

(Signed,) THOMAS ADAMS,
Paymaster & Clerk.

WELLAND CANAL.

No. 5.—Schedule of Lands on the WELLAND CANAL sold to sundry persons, with the Amount of Sales and Interest to 1st December, 1859, Amount paid in 1859, to 1st December, and the Balance remaining due on the 1st December, 1859.

NAME OF PURCHASER.	NUMBER OF LOT.	WHERE SITUATED	QUANTITY.	Amount of Sale.	Amount of Interest to 1st Decr. 1859.	Amount of Sale and Interest to 1st Decr. 1859.	Amount Paid to 1st Decr., 1859.	Balance due, 1st Decr. 1859.	REMARKS.
James B. Benson, on behalf of Hydraulic Company.....	.....	.....	.....	\$ cts. 8454 25	\$ cts. 3241 95	\$ cts. 11796 20	\$ cts. 2011 83	\$ cts. 9755 35	
Municipality of the County of Welland.....	.....	.....	.....	12912 00	4183 36	17095 36	3399 50	13785 80	
.....	Part of Lot No. 27.....	.....	.....	.....	.....	.....	.....	.....
.....	
Edward Henderson.....	.....	.....	.....	832 00	173 90	1005 90	575 06	430 84	
.....	North parts of Lots Nos. 26, 27 and 28.	.....	.....	.....	.....	.....	.....	.....
John Hanley.....	.....	.....	.....	200 00	.....	200 00	.....	200 00	
.....	Lot marked (F.).....	.....	.....	.....	.....	.....	.....	.....
Peter Gibbons.....	.....	.....	.....	200 00	.....	200 00	200 00	.....	In full.
.....	Lot.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	22598 25	7699 21	30297 46	6095 47	24201 99	

(Signed,) THOMAS ADAMS,
Paymaster and Clerk.

(Signed,) S. D. WOODRUFF,
Superintendent,
Welland Canal.

WELLAND CANAL.—SCHEDULE No. 6.—Statement shewing the Amount of Fines, and Damages levied, the Amount paid to 1st December, 1859, and the Balance remaining due to the 1st December, 1859.

Year.	Date.	Description of Vessels, &c.	Names of Vessels.	Amount of Fines Levied,	Amount of Damages Levied.	Amount paid to 1st Decr. 1859.	Amount remaining unpaid, 1st Decr. 1859	R E M A R K S .
1857	April 22nd.....	Schooner.....	S. H. Lathrop	\$ cts.	\$ cts.	\$ cts.	\$ cts.	In hands of Solicitors for collection.
do	do 30th.....	Propeller	St. Nicholas	80 00	2560 00	.....	2560 00	Do. do.
do	May 27th.....	Schooner.....	Wilson.....	.....	4800 00	.....	4880 00	do. do.
do	November 2nd	Steamer	Quincey	20 00	5 00	.....	5 00	
1858	April 30th.....	Schooner.....	E. M. Peck.....	.....	.....	20 00	.....
do	do do.....	do	Mohegan .....	.....	4 00	4 00	.....
do	May 3rd.....	do	Amelia .....	.....	1953 00	.....	1953 00	In hands of Solicitor for collection.
do	do 20th.....	Propeller	Lacrosse .....	.....	1246 00	.....	1246 00	Do. do.
do	June 12th	Schooner.....	Cuyahoga.....	4 00	1435 00	1428 32	6 68	Deposited with Hon. Receiver General.
do	July 20th.....	Brig.....	New York.....	40 00	.....	40 00	.....
do	October 6th	Schooner.....	E. T. S. Bernis .....	.....	10 00	10 00	.....
do	do 19th.....	do	Belle Walbridge .....	.....	4 00	4 00	.....
do	do 25th.....	do	New London .....	.....	30 00	30 00	.....
do	November 2nd	do	Olivia .....	.....	10 00	10 00	.....
do	do 24th.....	Barque	W. F. Allen .....	.....	5 00	5 00	.....
1859	May 5th.....	Schooner	Joel Robinson	6 00	.....	6 00	.....
do	do 5th.....	do	Monticello.....	.....	20 00	20 00	.....
do	do 28th	do	A Bradley .....	.....	40 00	40 00	.....
do	June 9th	Scow	Star	5 00	.....	5 00	.....
do	do 16th.....	Brig.....	Quebec .....	.....	2000 00	2000 00	.....	Paid into the Office of Public Works, Quebec.
do	do 25th.....	Scow	Cinderella.....	10 00	.....	10 00	.....
do	do 30th.....	Schooner.....	Petrel	10 00	6 80	16 80	.....
do	do do	do	Persian .....	.....	30 00	30 00	.....
do	July 1st	do	W. B. Hibbert .....	.....	100 00	100 00	.....
do	do do	do	Native .....	.....	4 20	4 20	.....
do	do do	Scow	Stevensons .....	.....	136 00	136 00	.....
do	do do	Raft & spars	North Star .....	.....	60 00	60 00	.....
do	do 22nd.....	Schooner.....	.....	.....	100 00	100 00	.....
do	August 27th	do	Typhoon .....	.....	3 50	3 50	.....
1859	September 7th	Raft.....	Morres.....	.....	14 00	.....	14 00	
do	do 9th.....	Schooner.....	R. Campbell.....	.....	10 00	.....	10 00	
do	do 10th.....	Propeller ...	Banshee .....	.....	5 00	.....	5 00	
do	October 22nd	Schooner.....	Amelia .....	.....	10 00	.....	10 00	
do	do 31st.....	Propeller ...	Prairie State .....	.....	10 00	.....	10 00	
do	November 4th.....	Schooner.....	Jessie Ann Hope.....	.....	10 00	10 00	.....
do	do 5th.....	Schooner.....	Tornado .....	.....	35 00	35 00	.....
do	do do.....	do	Dane .....	.....	20 00	20 00	.....
do	do 14th.....	do	Dispatch .....	.....	15 00	15 00	.....
do	do 26th.....	Propeller ...	Kentucky .....	.....	10 00	.....	10 00	
TOTAL.....				175 00	14691 50	4166 82	10699 68	

(Signed,) THOMAS ADAMS,
Paymaster and Clerk.

(Signed,) S. D. WOODRUFF,
Superintendent, Welland Canal.

WELLAND CANAL.

SCHEDULE No. 7.—Approximate Estimate of the probable cost of making the following repairs in maintaining the Works of the WELLAND CANAL, during the season of navigation, for the year 1859, viz. :

	Repairs.	Construction.	TOTALS.
<i>From Port Dalkousie to Thorold, 9½ miles, 25 Locks, 25 Waste Weirs, 10 Swing Bridges, Floating Towing Paths, and Bent Bridges.</i>	\$	\$	\$
8 Spare Gates, Repairs of other Gates and materials, Canal and Bridge repairs, removing bars from bottom.....	8,020		
Raising and protecting Canal Banks, Culvert through Towing Path below Lock No. 2.....		1,150	9,170
<i>From Thorold to Allanburgh, 3½ miles, 2 Locks, 1 Waste Weir, 3 Swing Bridges, Culverts, &c.</i>			
Removing Bars in Canal, repairing Mitre Sill and Gates, Allanburgh Lock.....	1,599		
Raising and strengthening Banks		1,100	2,699
<i>From Allanburgh to Junction, 7½ miles, 2 Locks, Aqueduct, 6 Swing Bridges, Bent do., Floating Tow Paths, &c.</i>			
Repairing and Protecting Bridges, repairing Float Bridges, &c.	2,480		
Raising, facing and strengthening Banks		1,440	3,920
<i>From Junction to Colborne, 7½ miles, 1 Lock, 2 Swing Bridges, Boom Timbers in Rock Cut, &c.</i>			
Repairing Booms in Rock Cut, Lock Gates and Bridges, Setting Snubbing Posts	1,085		1,085
<i>From Junction to Marshville, 16½ miles, 1 Lock, 2 Swing Bridges, 3 Culverts.</i>			
Opening Brown's Ditch Culvert, &c., Marshville Bridge.....	300		
Raising, facing and strengthening Banks		400	700
<i>From Broad Creek to Port Maitland and Dunnville, 6½ miles, 2 Locks, 3 Swing Bridges, 3 Waste Weirs, Dam, Bent Bridge, &c.</i>			
Repairs to Port Maitland Lock and Sulphur Creek Bridge	774		
Raising, facing and strengthening Banks, Clearing Culverts.....		1,200	1,974
Probable cost of Repairs of small damages done to Lock Gates and Bridges, &c.	452		452
Raising Piers at Port Colborne, damaged by storm, 26th November, 1859	4,500	5,200	9,700
Repairs and raising Port Maitland East Pier.....	1,000	1,800	2,800
Providing a pair of Lock Gates for Allanburgh Lock	1,500		1,500
Do. do, set of Gates to suit either the Port Robinson or Aqueduct Locks	3,000		3,000
	24,710	12,290	
Total for Repairs, Gates, Bridges, raising Canal Banks, &c., and constructing Eight Mountain Lock Gates			\$37,000

S. D. WOODRUFF,
Superintendent,
Welland Canal

Welland Canal Office,
St. Catherines, 20th December, 1860.

D.

SPECIAL REPORT OF THE SUPERINTENDENT OF THE WELLAND CANAL
ON THE TRAFFIC OF 1859.

WELLAND CANAL OFFICE,

ST. CATHERINES, January 16th, 1860.

SIR,—I have the honor to submit the following remarks, in answer to a series of questions, contained in your letter No. 30223 of the 30th ultimo.

1stly, and 2ndly. The number of vessels cleared at Port Colborne and Dalhousie, during each month, with the amount of toll collected at these Ports for the last two years, as shewn in the following tables. In this statement the way tolls are included, but not the collections made at the way Ports, which is furnished in the Appendix to my annual report.

COLLECTED AT PORT COLBORNE, Passing towards Ontario.				COLLECTED AT PORT DALHOUSIE, Passing towards Erie.			
1858.	No. of vessels.	Amount of tolls.		1858. No. of vessels.	Amount of tolls.		
		\$	cts.		\$	cts.	
March	2	3	69	.....	.....	...	...
April	207	22,087	83	221	3,834	71	
May.....	312	26,792	70	314	6,991	82	
June	273	19,179	85	295	5,114	39	
July.....	306	23,107	19	295	5,283	32	
August	230	14,759	40	241	5,754	38	
September.....	252	17,859	04	262	7,698	39	
October	246	18,958	68	215	6,699	49	
November.....	134	9,909	06	121	3,724	98	
December	7	561	76	8	42	89	
Totals.....	1,969	153,219	20	1,972	45,144	37	

1859.		\$	cts.	1859.	\$	cts.	
March .....	.....	.....	...	.....	.....	...	...
April	97	6,068	02	123	1,903	81	
May.....	223	12,935	18	187	4,717	86	
June.....	199	10,489	38	175	3,813	55	
July.....	150	6,511	48	148	3,249	76	
August.....	160	7,212	08	158	4,254	78	
September.....	178	10,251	50	194	6,297	35	
October	206	13,644	17	160	5,188	29	
November.....	189	13,492	03	161	4,321	73	
December	10	701	79	16	217	52	
Totals.....	1,412	81,305	63	1,322	33,964	65	

3rdly. In the foregoing Tables it is shewn, that the deficiency in the tolls, collected last year at Port Colborne, is 47 per cent. and at Port Dalhousie 25 per cent. less, than was collected at these Ports during the year 1858.

This falling off in the tolls is attributable to two causes, viz :—the absence of freight movements during the early part of last year, and the reduction of 25 to 50 per cent. made in the rate of tolls levied.

The articles paying the principal tolls were reduced 50 per cent., viz : wheat and flour.

4thly. The traffic of the Welland Railway comprised 14,713 tons, carried in 32 vessels, with full cargoes, and 5 vessels with parts of cargoes; 5 of them, containing full cargoes, and 4 with parts of cargoes, could not be passed thro' the canal in consequence of their dimensions.

The tolls on this tonnage would have yielded to the Canal \$2,896, and the vessels \$480—had the same been passed through the Canal. Of this, 1,907 tons were shipped to British ports, and 1,983 tons to the mills at St. Catherines. The balance, 10,823 tons, was sent to American ports.

The monthly traffic on the Railway was as follows, viz :

April,	1 vessel	318 tons,
August,	2 “	928 “
September,	5 “	1,841 “
October,	16 “	6,712 “
November,	13 “	4,914 “

37 vessels 14,713 tons.

Of the foregoing, it appears to me that 4,208 tons have been diverted from the trade of the Canal, which would have added to its tolls \$841 60.

Banking accommodation has been afforded to the shippers of produce over the Welland Railway, and it is believed that its principal traffic has been created through the facilities thus afforded—which traffic, under other circumstances, would most likely have been transported through the American routes.

5thly. On the New York State Canals, the amount of tolls collected last year was \$1,812,280 80, or \$235,110 50 less than in 1858. Its tonnage is less by about 320,000. Of the freight carried on these Canals, there is only one ton of *through*, to two tons of *way freight*, consequently the reduction in *through freight*, is about 106,000 tons.

On the New York Central Railway, there was carried last year 834,319 tons. Of this, 348,079 tons were *through freight*. There is a decrease in its earnings of \$327,653 83 as compared with 1858.

6thly. The tolls on the New York State Canals were reduced in 1858, 33½ per cent on agricultural produce, and 50 per cent. on merchandize. Again in 1859 there was a further reduction of 50 per cent. on merchandize and non-enumerated articles, and 33½ per cent. on most agricultural products.

The theory advanced by those persons who favor the reduction, is that transit on the canals must be cheapened, to retain the traffic against railroad competition within the State.

In consequence of the great reduction in the tolls upon the New York State Canals, a corresponding reduction in the tolls was made upon the provincial canals during the years 1858 and 1859, to retain the traffic through them.

A protection policy is now being agitated, to impose a toll upon the freight carried on the New York Railways, and also to raise the tolls on most articles passing on the canals.

The adoption of this policy by the New York State Legislature, will enable the tolls on the provincial canals, to be raised sufficiently, to yield a large increase in their revenue, without interfering with the traffic through them.

And, as to the relative advantages of the “American *versus* the Canadian route,” I beg leave to submit that were the same facilities afforded to the shippers to Lake Ontario, as are rendered to them at Buffalo for conducting their business, there is not the least doubt but that the trade, by the Canadian route, would be considerably increased.

The advantages possessed by the American routes on Lake Erie, are the ready access of market and cash advances, which are sooner obtained there, than they can be where the property is supplied to Lake Ontario by canal.

This fact has been clearly illustrated during the past season, by the shipment of produce to the Welland Railway, by a forwarding merchant residing and transacting business in Buffalo, who found it to his decided advantage to adopt that route, from the increased facilities afforded thereby.

I have the honor to be,

Sir,

Your obedient servant,

(Signed,) S. D. WOODRUFF.

T. TRUDEAU, Esq.,

Secretary of Public Works,

Quebec.

E.

REPORT OF THE SUPERINTENDENT OF OTTAWA WORKS, FOR 1859.

OTTAWA WORKS, SUPT'S. OFFICE,
OTTAWA, 23rd December, 1859.

SIR,—I have the honor to acknowledge receipt of your letter, requesting me to report on the state of the Public Works on the Ottawa and other rivers, under my charge.

On the 15th day of September last, I transmitted to the Department, a report on the outlay required during the Fall months, for the maintainance of the Works at the Joachim, Calumet, Mountain and Chats Stations, on the Ottawa, and having since been authorised by the Commissioners to proceed with the repairs, I would state for their information, that they are now in progress, and will be completed in due time.

In my September report, I mentioned that there were certain repairs required on the Madawaska and Gatineau Works, which could be best carried out during the Winter months. The raising of the main dam at the High Falls on the Madawaska river, has been a decided improvement, as it has had the effect of flooding out the most dangerous portion of Ragged Chute, where timber in former years was so much damaged, besides creating a large space for boomage.

HIGH FALLS SLIDE.—(*Madawaska.*)

About 150 feet by 6 feet of the bottom of this slide will have to be re-planked, and being 5 inches thick of hardwood, will require

4500 feet, B.M. @ \$30 per M measured in the work.....\$135.00

DAM AT FLAT RAPIDS, (*Madawaska.*)

One of the wings of this Dam must be repaired. I have carefully estimated the cost of the work as follows, viz :—

1200 cubic feet white pine timber, @ 10 cents.....\$120.00

133 do yds. stone filling, @ 50 cents..... 66.50

80 lb iron spikes, @ 10 cents..... 80.00

\$226.50

ARNPRIOR SLIDE.

The foundation of the Slide requires to be partially renewed at a cost of about \$100.00

GATINEAU BOOM.

Two of the support piers for this boom were undermined last season of high water and have upset. The bottom of the river at the booming ground is of fine sand, and is so soft that an iron rod can be sunk about twenty feet into it. When the Gatineau river is higher than the Ottawa, (which is often the case,) the strong current shifts the sand from the foundation of the piers, and causes them to turn over. The water at the lowest pitch is from 12 to 18 feet deep, and as the piers have to be built from 24 to 28 feet in height, they are necessarily very expensive, the cost of one being about \$800. I would strongly recommend that box piers be substituted for the old ones; they are made 12 feet by 12 feet, by 12 feet, in the shape of a box, and filled with stones; the cost of each will be about \$120. I caused a pier of this description to be sunk at the mouth of the Madawaska river, where the water is nearly 50 feet deep, and fastened the remaining boom to it, and I find that it answers the purpose well. When the bottom is sandy, (as it is at the Gatineau boom,) these box piers should always be used for mooring purposes, for, although they are displaced, the stones are held by timbers firmly bolted together, and can be made available in any position.

The cost of three such piers at \$120 each, would be.....\$360.00

Three mooring chains, each 75 feet in length, of inch iron, say

\$20.00 lb, @ \$6 per cent..... 120.00

\$480.00

The work at the Gatineau should be done in the month of February.

THE HULL SLIDE

Was built many years ago by Mr. Wright, and is now much decayed; by next September, the foundation of a new Slide should be laid, for, although the old one may be patched this winter, and used next running season, it would not be safe to risk it longer. I would therefore respectfully recommend that the sum of \$4,000 be included in next year's estimate, to be applied in the re-construction of the Hull Slide.

UNION SUSPENSION BRIDGE, (*Ottawa*.)

Should be repaired as soon as possible.

The following Works are in good order, viz:—

On the river Ottawa.	{	Portage du Fort Slide.
	{	Little Chaudiere do
Petawawa River.	{	Bemouix Boom and Chaudière booms, north and south,
	{	Boom at the mouth of the Madawaska, and the line of wooden bridges at the City of Ottawa.
On the Madawaska River.	{	Slides at the 1st and 3rd Chutes,
	{	do at Bois Dure and Crooked Chutes,
	{	Dam at half mile rapid and
	{	Boom at mouth of river.
	{	Long dam at Flat Rapids,
	{	Works at Balmer's Island,
	{	Calabogie retaining booms,
	{	Dams on both sides of Barrett's Chute,
	{	Guide Boom at the High Falls,
	{	Dams at Ragged Chute,
	{	do at the Ducks,
	{	do at Boniface Rapid,
	{	do on both sides of Bailey's Rapids,
	{	Slide at Chain Rapids, and
	{	Long retaining Boom at do.

THE CARILLON DAMS

Have been completed, and a new crib channel has been formed, through which the swiftest timber may be passed at low water, with fewer hands than in former years.

THE IMPROVEMENTS ON THE PETEWAWA, (*South Branch*.)

The Contractor is about to commence operations, and being a practical man, all will be ready for business the coming Spring.

THE IMPROVEMENTS ON THE SAGUENAY

Are well advanced, and I am assured by the Inspector, that they will be finished before the next "driving" season. More than a mile of the long slide has been completed, and the foundation of the remaining portion has been laid. The workmanship of this is very good, and the materials of which it is constructed have been well selected. The Dams already built have resisted the Spring floods very satisfactorily.

In submitting the above,

I have the honor to be,

Sir,

Your most obedient servant,
(Signed,)

HORACE MERRILL,
Supt. of Ottawa Works.

T. TRUDEAU, Esquire,
Secretary of Public Works,
Quebec.

F.

REPORT OF THE SUPERINTENDENT OF THE ST. MAURICE WORKS
FOR 1859.

SUPERINTENDENT'S OFFICE, ST. MAURICE WORKS,
Three Rivers, December, 1859.

Sir,—In compliance with the instructions of the Honorable Commissioner of Public Works, I have the honor to transmit the following Report, for 1859.

In consequence of the numerous changes in the Department, during the past year, I have deemed it not out of place, to give a brief description of the St. Maurice Works, their extent, management, &c., trusting, that it may afford some useful information, that could not otherwise be so readily obtained.

The St. Maurice Works consist of improvements upon the River, at five Stations, viz:—At the "*Mouth of the River*," at "*Grès Falls*," 18 miles up, at the "*Grande Mère*," 34 miles up, and at "*La Tuque*," 110 miles from the "*mouth*."

Mouth of the River.

The improvements at this Station, consist of a large store-house, 30 by 60 feet, forty-six Piers, and 12,181 lineal feet of Booms, with the necessary chains, plank, &c. This Station is managed, by a Deputy Boom-Master, who has a permanent salary of \$432 per year, and, like all others employed on the works, permanently, or otherwise, boards himself. His duty in the winter, is to take care of the stores, to see that the works receive no damage from the ice, frequently caused by the raising and falling of the water, and to do any other necessary work that may be required of him, by the Department. To save repetition, it may here be remarked, that all the permanent officers—slides and boom-masters—perform these duties at their respective stations. About fourteen men are here employed for 8 or 10 days, stretching the booms in the spring,—5 or 6 until the middle of July, or thereabouts, and 3—two gate-keepers and a watchman—until the first of November. Cost of works at this station, \$45,255 20.

Grès Falls.

The improvements here, consist of six Anchor Piers, and 6,000 lineal feet of conducting Booms. There is no permanent officer at this place.

Two men, under the control of the slide-master of Shawenegan, attend to these booms, for about two months, or until the timber is past. There is also an unfinished crib-slide at this station. Cost of works here, \$20,077 03.

Shawenegan Falls.

This is the most extensive and important station upon the river. It is managed by two permanent officers, one at \$2 per day, and his deputy at \$432 per year. The improvements here consist of a slide 600 feet in length, 4 dams 400 feet in length 17 large, and 21 anchor piers, and 17,500 lineal feet of retaining and conducting booms. It employs 18 men for about a month in the spring, and 12 men from that time until the timber is past. Cost of works here, \$60,185. 93.

Grande Mère Falls.

At this station, there is a slide 400 feet in length, 8 anchor piers, and 4,500 lineal feet of conducting booms, and is managed by a permanent slide-master at \$2 per day. From 8 to 12 men are here employed during the passing of the timber. Cost of works, \$27,071. 86.

La Tuque Falls.

The improvements here consist of a long dam, 5 anchor piers and 3,500 feet of retaining booms. In consequence of the limited quantity of timber manufactured above La Tuque during the past two years, this station has not been operated; but as extensive works are now going on in this vicinity, it will be necessary to extend the booms again next spring, and to this end two new anchor-piers are required which will cost, with chairs, complete—about \$300. Cost of work here, \$44,958 15.

Office Three Rivers.

At this place there is the Superintendent and Messenger. The Superintendent performs the duties heretofore performed by the Superintendent, the boom-master, the pay-master and the Clerk; their united salaries being over \$4,400 per year. The Messenger takes care of stores, office, cuts wood, &c. His wages are \$15 per month.

Construction.

No new works have been made upon the St. Maurice during the past year. The total cost of the improvements hereinbefore mentioned, including certain other charges contained in the account for construction, is \$218,101 90.

Repairs.

Repairs during the year 1859 have cost the sum of \$543,21. It is impossible to say what the repairs may cost for the coming year, but so far as I am now capable of judging, they will not much exceed the amount paid in 1859.

Maintenance.

The following statement shows the cost of maintenance for the past three years:

Maintenance 1857	- - - - -	\$11,870 00
do. 1858	- - - - -	7,648 07
do. 1859	- - - - -	7,234 54

It may here be remarked that the salary of pay-master having heretofore been charged to maintenance, and his office being now abolished, or rather united to that of the Superintendent, a further reduction may be looked for in 1860. I may also add that these considerable reductions, are taking place at a time when the greatest activity prevails in the lumber trade, it having just emerged from a long period of very great depression. A large increase of the business upon the river does not, however, necessarily cause a corresponding increase in the expenditure for maintenance. Since my appointment, now nearly two years, although as few men as possible—compatible with the safety and efficiency of the works—have been employed, yet, I believe that five times the quantity of lumber might have been passed without any considerable addition to the establishment.

Revenues.

The *direct* revenue from the slides and booms for the past four years, has been as follows:

Revenue 1856	- - - - -	\$2,163 25
do. 1857	- - - - -	3,397 00
do. 1858	- - - - -	2,395 40
do. 1859	- - - - -	2,121 81

What the indirect revenue in the form of ground-rent and duties has been, I have no means of ascertaining.

During the past year, only *five* parties have operated upon the River, producing 61,168 saw logs, and 1,784 pieces of square timber. This year, no less than *fourteen* establishments are at work, and will, likely, make about 100,000 saw logs and 20,000 pieces of square timber, thereby increasing the direct revenue to about \$5,400, and the indirect revenue *in duties alone* to about \$29,999 79, to which must be added, the amount realized at the sale of eight limits in September last, \$3,026 60, and the ground-rent upon all the old limits, the amount of which I cannot learn at present.

Total revenue four 1860 will probably be very nearly \$40,000.

The deficiency in the revenue from the St. Maurice for several years past, may be attributed to several causes. 1st. to the general stagnation of trade; 2nd to the unsatisfactory tenure by which limits have hitherto been held, and lastly to the want of improvements upon the tributaries of this River, without which, the large sum of \$ 218,101 already expended, will, I fear, prove an unprofitable investment, although the importance of the Territory in an agricultural point of view—which the St. Maurice works have contributed largely towards opening up—should not be overlooked. At the public sale in September last, all the available limits sold quickly and at high prices; and frequent were the enquiries for timber-berths upon the Vermillion, Mattawan and other tributaries which now remain sealed up and perfectly valueless for the want of improvements;—improvements

that have frequently been petitioned for and recommended, and the plans or estimates of which—in the most urgent cases—are already before the Department.

In conclusion, I would remark, that during the past year, although the water rose to the unprecedented height of 23½ feet in the river, the works, generally speaking, operated well and answered the purposes for which they were constructed. I may also add, that all those employed under my Superintendence, have performed their duties with promptitude and ability, giving general satisfaction.

I have the honor, to remain, Sir,

Your most obedient servant,
(Signed,) HENRY R. SYMMES,
Superintendent.

To the Secretary
Department of Public Works,
Quebec.

G.

REPORT OF THE CHIEF ENGINEER ON THE IMPROVEMENTS OF THE RIVER SCUGOG, AND THE "INLAND NAVIGATION OF THE NEWCASTLE DISTRICT."

QUEBEC, 30th November 1859.

TO THE HONORABLE THE COMMISSIONER
OF PUBLIC WORKS.

SIR,—In compliance with instructions relative to the Works, constructed and proposed for the improvement of the River Scugog and "Inland Navigation of the Newcastle District," I recently visited the respective localities, and now have the honor to report in order following:—

Commencing at the village of Lindsay, where, by means of a Lock and Dam, the River Scugog is rendered to some extent navigable, and a line of water communication opened in a south-westerly direction to Port Perry, or within 19 miles of Port Whitby, on Lake Ontario.

The Lock is situated on the north side of the River, and the Dam (240 feet long,) starts from a point about 60 feet below the upper gates, and runs obliquely upwards, to the opposite bank, where there are several mills kept in effective operation, by the head maintained on the reach above.

The present line of road on both sides leads towards the Lock, and crosses it by means of a swing bridge placed over the chamber—the river and raceway from the mills, being crossed by two bridges of an inferior class, and now all but worn out.

The exterior works of both Lock and Dam are formed of timber—the latter is in a passable state of repair, but the Lock throughout is in a very dilapidated condition, especially the south wall, which from its position could not be protected by backing. The exposed parts of the timber are completely rotten, and at some places on the south side for several courses in depth, it has fallen to pieces. As a whole, the Lock is so thoroughly worn out and decayed, that, in my opinion to attempt filling it, may at any moment, if the upper gates are opened, lead to its complete destruction, the result of which, would not only be the drawing down of Lake Scugog, and flooding the adjoining country below, but very likely cause serious damage to other works on the line of navigation.

It therefore appears to me that all attempts to use it, either by way of experiment or otherwise, should in future be strictly prohibited. An order to that effect will be the more readily complied with, as it takes from ten to twelve men to swing one of the gates.

Immediately below the Lock, the river turns so suddenly to the northward, that the line of chamber walls, prolonged downwards, would cut across the channel-way within a distance of 150 feet, and the whole river in 200 feet, and, at a distance of 400 feet, a vessel approaching or leaving, is nearly at right angles to the line of the walls.

Access to the Lock is however rendered still more difficult, by a shoal that extends so far out from the line of the north wall, that within 30 or 40 feet of the gates, a vessel has to change its position fully 30 degrees before it can enter.

These objections may be slightly remedied in locating a new structure; but they cannot be wholly done away with, except by forming a new cut, which it is believed would require a greater outlay, than the extent of trade likely to be benefitted would warrant.

At the time of my visit there was from 4 feet 6 inches to 4 feet 8 inches water on the lower mitre sill of the Lock, and in sounding through the channel-way downwards, for a distance of fully one half of a mile, or near a wharf used by the Port Hope and Lindsay Railway Company, at several places the depth was found barely 4 feet, and for the greater part of the distance water of this depth was exceedingly narrow, winding and intricate. At some places the shoals are of rock; but where less depth than 4 feet was found, in a cross section of 60 feet, the obstructions for the most part consisted of silt, saw dust, slabs, sunken timber and loose stones, overlying a thinly stratified rock, at some places of a like height, but generally a little lower than the mitre sill. At this time the water was said to be at its proper height, although on visiting Bobcaygeon the following day, it was found to be fully 5 inches over the apex of the Dam there, which, without "slash boards," is intended, I believe, to regulate the level. Such being the case, the water may at any time be expected to fall, at least 5 inches below what it was when the soundings were taken, thus leaving barely 3 feet 8 inches on some parts of the rock shoal, and considerably less on the sides of a channel of very limited width.

Thus it will be seen that however necessary the construction of a new lock may be, the improvement of the channel-way below it, is no less essential to the continuance of the navigation, through and between the Lakes, both of which are works that will be unavoidably attended with considerable difficulty, and expense in their execution.

The position of the Lock is such, that the space to be occupied by it, must be enclosed on three sides, by coffer dams of sufficient height to guard against freshets, during the time the works are in progress, while the nature of the foundation as regards leakage is quite uncertain, and the improvement of the channel is confined to the bed of the river, from which there is no means of turning off the water, except by coffer dams—a mode of proceeding that, under the circumstances, is not recommended, as the rock may be loosened by the ordinary process of blasting under water, and both it and other obstructions advantageously removed, by the dredging machine which the Government has in that vicinity.

It is much to be regretted that the situation of the mills and dam, renders it necessary to locate the proposed new lock at the head, instead of the lower end of this shoal, where a more accessible position for it might have been easily selected, and the expense of deepening and widening the channel altogether avoided. Still, however desirable such might be, circumstances prevent the selection of any other site than either that occupied by the present structure, or one in its immediate vicinity.

If the former be adopted it will be necessary to cut through the present "river dam," and construct a longitudinal coffer dam outside of the old structure, the whole length of the Lock pit. This would of course contract the water way, whilst the works were in progress, and on its removal leave the south wall of the new Lock exposed in like manner as the old one has always been.

Both these objections, it is believed, would be met, and the "river dam" left undisturbed, by placing the new Lock, say 10 feet further to the north than the old one, thus allowing the present south wall to remain, first to serve as part of the necessary coffer dam, and afterwards for the protection of the new work, thereby obviating the necessity of forming the rear side of the south wall of dress stone, as originally contemplated. This, although causing considerable additional excavation on the north side, at both the upper and lower entrance, would very little, if any, increase the ultimate cost of the work.

I am therefore of opinion, in the absence of details, that it would be the most judicious course, to place the new structure in the position above indicated.

The unserviceable condition of the old Lock having been from time to time represented, and its reconstruction urged upon the Government, by the inhabitants and other interested parties, a contract was entered into in 1857, for the furnishing of a portion of the necessary materials for that purpose.

On this Contract there has been provided and paid for at assumed rates :—

324 $\frac{1}{2}$	Cubic Yards of Dressed Stone,
575	do do rough do
7865	do Feet Pine Timber,
1688	do do Oak, do
18	Knees for Lock Gates, &c.,
50,000	Feet B M Pine Plank,

Amounting in all to the sum of \$5842.97.

The stones are still at Bobcaygeon, the place where they were quarried. The planks are piled near the Lock, and the timber lies on the sides of the roads and streets, in the same neighbourhood.

These materials are of course fast deteriorating, and will continue to do so while they remain in their present position.

I may further state that, instead of having the Swing Bridge over the chamber of the Lock as at present, the inhabitants are desirous of having it placed on the line of Lindsay Street, which is from 25 to 30 feet below the lower wing walls of the Lock.

This arrangement would decidedly improve the appearance of the place, and obviate such delays as might otherwise be experienced, when a vessel was locking through ; still, as independent abutments must either be built, or the lower wings extended for that purpose, it would considerably increase the cost of the work.

The advantages that the village and locality would derive from it, might however, be a sufficient inducement for the inhabitants to defray a portion of the additional expense.

The probable cost of completing the works referred to, and for the improvement of the Channel up to Lake Scugog, is estimated as follows :—

Constructing Coffor Dams and unwatering work.....	\$ 3600.00
Removal of old Lock, excavation and embankment.....	5000.00
Timber and plank in foundation, mitre sills, iron stop-waters, &c.,.....	6000.00
Masonry of Lock.....	19200.00
Gates, sluices, &c., complete.....	2900.00
Swing Bridge,.....	6000.00
Contingencies.....	2300.00

Probable Cost.....	\$40.000.00
Deduct for materials provided.....	5.842.97

\$34157.03

Amount still to be expended, if the Swing Bridge is placed before the

Lock, a further outlay will be necessary of.....\$ 2400.00

Deepening and improving Channel below Lock... .. 14000.00

Improvement of route at several places between Lindsay and Lake
Scugog..... 10000.00

Total..... \$60557.03

The above Estimate contemplates that the Municipality of Lindsay, or of the Township, will construct the necessary bridges over the river, and race-way from the mills.

In closing this part of the subject, it is deemed proper to state, that the only portions of the works referred to, which may for a time be dispensed with, when the improvements are undertaken, are those from the Lock upwards to Lake Scugog, and that before the others can be placed under contract, in anything like a satisfactory manner, it will be necessary to have a careful survey made, and correct cross sections taken of all that portion of the river passing through the town plot of Lindsay.

Following the course of the river downwards, to Sturgeon Lake, a distance of about 7 miles, the Channel is generally of sufficient depth, with the exception before stated.

A section of the route has been much improved within the last few years, by cutting off of the most prominent points, and forming new cuts at a few of the worst bends, so that boats can now pass through with comparative ease, to what they did formerly.

At Sturgeon Lake, a distance of 12 miles, there is an abundance of water for much larger class than any at present, or at all likely to be on this route.

This Lake is supplied principally by the Fenelon River, which enters at its north west end, and forms the outlet of numerous small lakes in the interior, on the shores of which lumbering operations are carried on to a large extent, and the surrounding country at many places is said to be rapidly filling up and improving, by an industrious class of settlers.

When the question of opening a line of communication between Lakes Huron and Ontario, by the route of the Trent and Lake Simcoe, was under consideration (about 30 years ago,) and I believe partly decided on, it was proposed to connect Sturgeon and Cameron Lakes by means of three Locks, placed in the line of a ravine in the vicinity of Fenelon Falls, thence to ascend to Balsam Lake by another Lock.

The scheme as a whole, although generally abandoned, is in part still viewed favorably by a few, who urge that a large extent of rich and fertile country, would be opened up by continuing a line of navigation past the Falls, and that the Government would be more than compensated for the expense of constructing the works, by the increased value of land, &c. Although by no means convinced of the correctness of this view, it is submitted from the pressing manner it has been from time to time urged upon me within the past year.

The neighbourhood of the Falls however, offers great facilities for the erection and efficient working of machinery, especially such as require the power which an abundance of water, with a high head and fall can supply, and its advantages otherwise, for large Lumbering manufactories, are second to only a few places in the Province.

Some years ago large saw mills were erected there, but they had only been a short time in operation, when the whole were accidentally destroyed by fire ; since that casualty no use has been made of the water power.

BOBCAYGEON WORKS, &c.

The Works here are of an extensive and somewhat varied character, consisting of three dams, a slide, a short reach of canal, a swing bridge, a lock, a saw mill basin, and mill race, all of which, have either been constructed or thoroughly repaired since 1855, except the slide, for the re-building of which materials have been provided.

There having been, originally, three natural outlets at the lower end of Sturgeon Lake, the centre one being the smallest and most direct, was selected and improved so as to form what is now the navigable channel.

The others were closed by dams of a sufficient height, to maintain the water at 3 feet 9 inches, on the shoal below Lindsay Lock.

These Dams, so far as could be seen, appeared to be of a good class of work, and from the information furnished on the spot, I am led to believe, that when the repairs were in progress, all the defective timbers observed were taken out, and others put in their places, and that the upper side of all of them was covered with new plank, of sufficient length, to reach from top to bottom, and, further, that these covering plank were properly puddled at the top, and the whole afterwards well backed up and loaded to a good depth with gravel.

At all events they stand well, and are as staunch as could be expected, or the circumstances require.

The Canal is 33 feet wide, and about 900 feet long, including the Lock, 500 feet of it is lined with timber and plank, to prevent the water escaping by the numerous and large fissures in the rock through which it is formed.

At a distance of 100 feet above the Lock, a roadway is continued across the Canal, by means of a swing bridge, supported on abutments of dressed stone, starting from the surface of the rock. The bridge is constructed in a manner similar to those on the other Provincial Canals.

The Lock is 33 feet wide, and 133 feet long between the gates, and has a lift of 6 feet ; both the upper and lower mitre sills are placed on the same level, and so as to be 5 feet under the assumed low water mark.

The wings, recesses, and piers of both ends are of cut stone, and the face of the chamber walls consists of what is termed "hammer dressed work."

The whole of the masonry is of a good class, well-dressed, and laid, I believe, in hydraulic mortar.

The upper and lower gates are of the same length, and constructed "on the solid principle" of pine timber, and are opened and closed by means of balance beams.

On the south side of the Lock, and at a distance of about 70 feet below it, is a small grist mill, to which a raceway of masonry has been built, from a point 10 feet above the upper recess, the rear part of the Lock wall forming one side, and a separate wall the other. The bottom is well secured with concrete timber and plank, and the top closely covered. The whole forming a conduit for the water, that will compare favorably with the greater number of works of its kind.

On the north side of the Lock is a saw mill, for the convenience of which, a "saw log basin" has been formed of a like class of masonry as the chamber walls of the Lock. This basin is also the head race to the mill, and has its entrance from the Canal about 10 feet above the upper recess.

From the above brief description of the works, it will be evident they are generally of a good class. There are, however, some serious drawbacks to the usefulness of those directly connected with the navigation, arising from,

1st. The all but inaccessibleness of the Lock at its lower entrance.

2nd. The frequent obstructions experienced in approaching it from above, &c., each of which will claim attention in its order.

1st. The Lock being situated immediately above a sudden bend of the channel-way, the sides of which consist of large blocks of stone, angular and pointed, and the space between them so extremely narrow, that a vessel in passing, is liable to be injured under any circumstances, while the danger is greatly increased, and the difficulty rendered all but, and frequently altogether insurmountable, by the strong current that sweeps directly across the channel, from the tail-race of the saw mill above referred to, at a point within 75 feet of the lower end of the Lock, and near the narrowest, most crooked, and intricate part of the outlet; and moreover, slabs, edgings and saw dust from the mill, very often complete the entire blocking up of the passage.

At the time of my visit there, in the fall of 1858, a steamer of very light draught was delayed for a considerable time, but on the saw mill having been stopped, the vessel succeeded, by a good pressure of steam, in ploughing through the slabs, &c.

Last fall, while I was there, the steamer Ogema, succeeded with great difficulty in passing downwards through this channel, but was quite unable to return.

This was alleged by some, to be caused wholly by the waste of water at Buckhorn, lowering the lakes above; but an examination of the various matters connected therewith, fully convinced me that, it was only one of the many causes.

The channel can of course, be much improved by increasing its width and depth, but, unless some stringent regulation is enforced for its future protection, it would again, in a short time, be in an equally unserviceable state as at present.

The proprietor of the mills, however, assured me that, in future, no slabs or edgings would be allowed to get into the channel, still, with all due respect to such promises, it must be admitted, that what has been done, may, under similar circumstances be done again, while the propriety of allowing the efficiency of any Public Work, to be wholly dependent on the forbearance of any private individual, seems exceedingly questionable.

In order therefore to prevent such occurrences in future, and remedy some of the evils complained of, it is proposed to place a strong RACK across the tail race of the mill, at a short distance above where it enters the channel, and, at a few feet beyond the outlet, to moor a strong boom made of two depths or more of heavy timber,—the latter it is believed would give the current a more down ward direction, while the rack would effectually keep the channel clear of everything except sawdust, which although found to be a great nuisance as it enters the lock, and settling there prevents the gates from working freely, cannot be well got rid of, without incurring the expense of collecting it and carting it away, or turning the tail race to the other side of the island, which would really be the better course, were it not that a few inches of back water would at times be likely to diminish the head.

The works above proposed together with widening the channel at two points, (one on the north and the other on the south side), removing loose stone from the sides and bottom, clearing out sunken timber, slabs &c, could be done for about \$1,000 00; still with a larger sum judiciously expended, the entrance could be still further improved.

2ndly. The width of the cut above the lock as already stated being 33 feet, does not admit of two vessels passing each other in it, which, in the absence of any regulations as to where one or other shall tie up, has on several occasions led to unnecessary squabbles, among those in charge of them.

But the greatest cause of annoyance and delay arises from the channel being obstructed by sawlogs, which, I was informed, are often brought down in rafts, and separated above the gates, and some times in the lock, the "traverses" and "withes" that connected them, being allowed to sink or float according to circumstances, the latter being the exception, this was found to be the case on the two occasions that I visited the place. Both times the canal was obstructed by saw logs, and sunken traverses of heavy green timber had to be grappled up from the bottom of the lock, before the gates could be opened or closed, while the "withes," it is said, frequently get so twisted round the valves, as to render them unserviceable.

I was further informed that the sawlogs used during winter, are hauled across the swing bridge, and there dumped into the canal, causing large quantities of bark to accumulate at and in the lock.

These liberties taken with the navigation, clearly show that it is looked upon as secondary to the milling interest of the place, a conclusion most likely to have been brought about, by the circumstances of the original works having been allowed to remain so long in an unserviceable condition, together with the fact of the whole adjoining property, being owned by private individuals.

The improvements in the first instance having been carried on under the management of local commissioners, who, from all I have been able to learn, acquired no other title to the land through which the canal passes, than verbal permission to that effect from the proprietor, it has led to great dissatisfaction and interference with the works, as well as much additional expense in their construction, as the parties now owning the lands, claim up to the water's edge. Mr. Boyd, the proprietor of the mills, is understood to own the whole on both sides of the lock and canal, up to the swing bridge, and to have a lease for twenty one years of all on the north side above that point; the land on the south side is also said to be private property.

The whole is however occupied on both sides up to the brink of the cut, with lumber piled to a considerable height, which when removed is placed directly into a vessel moored in the canal, thus affording no opportunity whatever for another to pass.

Thence, there being no room or place, in the vicinity of the village, for vessels landing or receiving freight, other than those in the employment of the mill owner, parties insist on doing it at the lock, where contrary to all known regulations elsewhere, merchandize, hay, wood, gravel and building materials have been landed. In vindication of this it is said, that the works being public property, the public ought to have some accommodation from them. It is further stated that emigrants for the back townships (which are fast settling up) on arriving at that point, are, for similar reasons, put to great inconvenience and expense, with their baggage. It is therefore urged by the inhabitants that a public wharf and store house, are not only required, but that they should be provided by the government.

From what has been said, it will be evident that, in order to keep this route open for navigable purposes, it should be placed under a similar class of regulations, as those in force on the other provincial canals, especially that the 11h section of them relating to obstructing Public Works should be strictly enforced, with such additions as the following :—

1st. That no scow, barge, or other vessel should be allowed to take on or deliver freight, while in either the Lock or the Canal, except that passenger steamers may have the privilege of taking in fuel, landing or taking on freight, when in the Canal, provided that no longer time is occupied in so doing, than one half hour, and no detention is caused thereby to any other vessel.

2nd. That, in cases of two vessels approaching the Lock from opposite directions, about the same time, one of them should stop or tie up opposite a fixed point, outside of the entrance, until the other has passed through.

3rd. That in cases where logs are taken down to the saw mill in operation on the north side of the Lock, the rafts of which they form a part, must be separated in the Bay above

the entrance, and no more than two logs abreast of each other shall be sent down, or allowed to accumulate in any part of the Canal at one time, neither shall there be in the whole Canal, at any one time, more logs than the basin built for their reception can accommodate;—but especially that no floats, “traverses” or “withes” shall be allowed to enter the Canal, whether separate or connected with the logs intended for the saw mill, and further that any bark, slabs, edgings, or other obstructions found in the Lock or approaches to it, known to have emanated from the mill or handling of the logs for it, shall be removed at the mill owners expense, who shall in addition be fined the sum of

for each time such an occurrence takes place.—

The Lock Keeper is the only person in any way connected with the management of the works at this place. He appeared active and intelligent, but his health was scarcely equal to the efficient performance of such duties as devolve upon a person acting in that capacity.

He stated that he had repeatedly, within the past two years, applied by letter to the department, for instructions relative to his duties, stating the difficulties he had to contend with, &c., but had received no answer.

These troubles were then enumerated in detail, but as they relate principally to matters already referred to, it is unnecessary to repeat them here.

It however appears to me that a Lock Keeper at a station so remote, being allowed to act without instructions either gives him too much power, or, as interested parties say, leaves him none whatever. I therefore consider his duties should be sufficiently defined, to enable him to act promptly and in such a way that his authority will be respected.

Having thus pointed out the principal matters requiring attention at this place, it is proper to state that the following mentioned works of maintenance are also necessary, namely :—

Clearing out the chamber of the Lock, adjusting the lower gates, which are at present difficult to open, or close, and raising the Swing Bridge so as to rest more on the pivot, furnishing and attaching to it a travelling crab, for the purpose of moving it, all of which would cost about \$350.

The slide of the upper dams should be also reconstructed;—for this purpose the greater portion of the necessary materials have been provided, delivered and paid for. The probable cost of what is still required, together with the workmanship, will amount to \$600 00.

It may further be said, that the great difficulty experienced in unwatering the Lock pit when the works were in progress of construction, at this place, had rendered necessary a large outfit, consisting of a portable engine (8 horse power) 4–12 inch pumps, suction hose and other articles, which were used for part of the first season, but found insufficient for the purpose. Consequently for the second years operations additional power was provided, consisting of an engine of 18 horse power, and more efficient pumping apparatus, which when worked at a high speed, effectually accomplished the object.

The whole of this machinery still remains at Bobcaygeon, principally under cover of a temporary shed erected for the purpose.

In the event of its being allowed to remain there much longer, I consider more care should be taken of the engines, both of which are of a good class, well got up and finished.

The Dredging machine used in improving the Channel of the Scugog River, is also at Bobcaygeon, where it lies partially sunk. The engine and machinery is the property of the Department, but the scow or vessel on which it is fitted up, is claimed by the Contractor.

It is however very desirable to have the question of ownership of the hull decided, before the machinery is further injured by being in the water.

BUCKHORN RAPIDS.

The principal works at this place are a Dam, a road bridge, two flumes, a slide for the passing of lumber, with guide piers and booms leading thereto.

The Bridge is a new structure about 642 feet long, built over and framed into the dam, of which it may be considered part; it is well and substantially executed, of good materials, and as a whole will compare favourably with most erections of its kind.

It forms the only means of a land communication with the northern Townships, for a distance of at least 15 miles on either side of it, where lumbering operations are at several

places carried on to a large extent, and by it the slide, flumes and piers, are at all times rendered accessible.

Within the past few years the greater portion of the dam has been rebuilt, and the remainder of it is said to have been thoroughly repaired, and care taken in both cases to render it staunch; still the precautions adopted appear not to have been quite successful, there being a considerable body of water passing through under it.

This may however be attributed more to the foundation than to any defect in the work—the bed of the River at the place consisting partly of loose granite boulders and rock, in which there are many large deep fissures running in every possible direction, some of which no doubt extend a long way above the dam and others below it.

These the Contractor informed me he had endeavoured to staunch, where they appeared within the line of his temporary dam, and that he had succeeded in doing so with many. Still it is quite possible that some of them might not be visible there, although open higher up stream.

Having carefully examined this work on two different occasions, I am favourably impressed with the principal part of all that could be seen of it, and judging from circumstances together with the representations made to me on the spot, there appears no reason to doubt, but that the portion of it under water was made equally substantial. Still the appearance of the water surface having induced me to make a close examination of the apron, I am led to believe that it might be made tighter, by an additional covering of gravel and brush, at a few places where the greatest quantity of water seemed to escape, and therefore recommend the sum of \$500 be applied to that purpose.

This dam being intended to maintain Buckhorn, Mud and Pigeon Lakes, and the river connecting them, at a navigable height, when any deficiency of water is experienced by vessels, the cause is at once attributed to the insufficiency of the dams, and the leakage at it, is pointed to as a proof of this being the case.

It should however be borne in mind, that the leakage complained of is not equal to one third or at the outside one half of the volume of water, that is constantly passing at Bobcaygeon, shewing clearly that there must be other ways of it escaping than directly under the Dam.

A fact that no one can fail to be convinced of, who in passing along the Bridge, has observed a rickety old flume connected with a small saw-mill, situated a short distance below on the north side of the river, that there is there more leakage and water wasted, than escapes in the whole length of the Dam.

There is no objection whatever to the mill, or even one triple its capacity being supplied with an abundance of water through the opening left for that purpose; but there are certainly many decided objections to the unnecessary waste of water, that takes place through the works leading to it; so much so, that in my opinion it is quite useless to attempt keeping the line of navigation, above, in anything like a passable state, during the early part of the fall, if the owner of this mill cannot be compelled to put his flume into a proper condition.

I am not aware of the nature of his claim or right to the privilege, but whatever that may be, no private interest should be permitted to interfere so much with the utility of an extensive Public Work.

It therefore seems proper that the owner should be notified to the effect, that, unless the works leading to his mill are, within a reasonable time, placed in such a state of repair as not to consume more water than is required for his milling operations, the water will be shut off at the entrance to his flume.

On these matters having been attended to, there is every reason to believe that no deficiency of water will be experienced at any season, provided that such arrangements are made, as will prevent in future the careless or designing from interfering with the works.

The necessity of this will be evident from the fact, that on several occasions the stop logs have been cut out of the flume, at one time for the purpose of lowering the water in the Lakes above, and at another time with a view of sending down a volume, sufficient to carry rafts over some of the shoals below,—while on another occasion a large quantity of sawlogs, were sent down towards the Dam, without any one feeling interest enough in the matter to remove the stop logs from the slide, so as to allow the rafts to pass,—the result of which

was the destruction of a large portion of the guide boom, and imminent danger to other parts of the works.

It thus shews that at certain seasons without some one on the spot having control, no dependance can be placed on either the maintenance of the water or the security of the works themselves.

Whilst in that neighbourhood my attention was repeatedly drawn by interested parties, to the difficulty and danger that exists in timber passing immediately below the slide there, arising from the extent of shoal water, and set of the current below the dam, at what is called the "running season." Although I have not seen the water at the pitch referred to, still the appearance of the place seems to bear out the representations made. It therefore appears to me that the only way of remedying the evils complained of, is to extend the pier from 150 feet to 200 feet further down stream. This would cost about \$2500.

Having thus drawn attention to the position and condition of these isolated works, undertaken with a view of creating the means of communication between some of the Island Townships in their vicinity;—it is deemed unnecessary to say more than that if these improvements possess, even a moderate share of the importance which has been claimed for them, they should undoubtedly be placed under such regulations, and management, as will have a tendency to render them more serviceable and efficient, and with that object in view I beg respectfully to submit the foregoing suggestions.

I have the honor to be,

Sir,

Your obedient servant,

(Signed) JOHN PAGE,
E., C. Public Works.

H.

REPORT OF THE CHIEF ENGINEER ON THE DEEPENING OF THE ST LAWRENCE CANALS.

QUEBEC, January 23rd, 1860.

TO THE SECRETARY OF PUBLIC WORKS,

SIR,—Agreeably to instructions, I have the honor to submit the accompanying estimate, of the probable expense of increasing the draught of water, in the St. Lawrence Canals, to ten feet six inches on the mitre sills of the Locks, &c., as called for by an *Address* from the *Legislative Assembly*, dated 16th March, 1859, to His *Excellency* the *Governor General*.

The address, although referring to the Cornwall, Beauharnois and Lachine Canals, only, is understood comprehensively to mean the adaptation of the present navigable route, of the upper St. Lawrence, to a larger or more deeply loaded class of vessels, than have hitherto been able to pass.

It is therefore deemed pertinent to remark, that although many large vessels, in descending the River, pass outside of the Williamsburg sections of the Canals, still all loaded freight vessels, must pass through them in ascending; hence, unless similar improvements are carried out there, the navigation will still be limited to its present capacity.

For this reason, it has been considered proper to submit an estimate of the probable outlay required to increase the draught of water throughout, so that the whole may at once be within reach of the Department.

It may further be said, that the Welland Canal has a draught of "ten" feet water only, instead of "ten feet six inches" as intimated; the estimates are, however, based on obtaining the latter depth on the mitre sills of the Locks, and 11½ feet in the reaches between them.

With a view of placing all available information in as convenient and condensed a form as possible, copious notes have been appended to the respective Estimates, explanatory of

the circumstances, nature, and extent of the works proposed to be done, instead of submitting a long, and otherwise unavoidably monotonous Report.

Attention having been drawn, both to details, and general principles in the manner above stated, I may add that the Estimates have been prepared, solely with a view to increase the draught of water, avoiding the introduction of all items of expenditure unconnected with that object,—except in a few cases, where it is indispensable that works should be proceeded with, at the same time when those directly connected with the deepening are in progress.

It may further be stated, that there is good reason to believe, that the re-building and alterations of all the structures referred to in the Estimates, can be effected in the winter and spring, with little or no interruption to the navigation, provided they are placed in the hands of energetic contractors, in sufficient time to admit of materials being provided, and arrangements made for that purpose, during the summer previous ; and at places where the works consist of dredging, or of forming embankments, they can, of course, be proceeded with in summer, with little or no inconvenience.

The following abstract of the Estimates, shows the approximate cost of effecting the object, viz :—

Cornwall Canal,.....	Total	\$250,000 00
Beauharnois do, .	do	150,000 00
Lachine do,	do	446,000 00
Williamsburg Canals,	do	182,000 00
Amount.....		<u>\$1,028,000 00</u>

Respectfully submitted,

(Signed,) by your obedient servant,
JOHN PAGE,
C. E. P. Works

CORNWALL CANAL.

ESTIMATE of the probable cost of deepening the Cornwall Canal, to a depth of 10½ feet on the Mitre-sills of the Locks, and 11½ feet in the levels between them.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
A.—Deepening upper entrance and part of canal above Grand lock, distance 4.750 feet, width 100 feet, mean cutting 1.75=30,787 cubic yds., at 55 cts.		16,932 85	A.—At low stages of the river, there is barely 9½ feet water in this portion of the Canal, while the entrance, being in comparatively still water, admits of no means of increasing the draught, except by lowering the bottom, both above, and in the level below the Lock. The material is of a nature difficult to remove.
B.—Taking down and re-building Grand Lock, construction and removal of coffer-dams, and unwatering work.	3,000 00		B.—There is frequently not more, and occasionally less than 9 feet water, on the upper mitre sill, and there being no other way of increasing it, than by taking up and relaying the recess platform and sills, to suit the required depth, and the Lock, consisting of masonry, opposite the gates, and at the wings only, it is proposed to take down, and rebuild the whole, in a permanent manner.
Taking down and re-building 1,900 c. yds. of masonry, at \$4 50.....	8,350 00		
C.—Removing present chamber walls and foundation.	3,500 00		C.—The present chamber walls, being of crib-work, and much decayed, when rebuilt, should be constructed of masonry, as provided for in the Estimate.
D.—Furnishing materials, laying new foundations, mitre-sills, &c.	10,500 00		D.—It is believed that new materials will have to be furnished for the greater portion of the foundation.
Chamber walls and additional masonry, at both ends of lock, 2,150 cubic yds., at \$8 50.	18,275 00		
Excavation and embankment and puddle in rear of walls, foundation, &c.....	3,230 00		
Removing, altering and replacing Lock-gates, and contingencies.....	3,745 00	50,800 00	
Securing, and alterations, to head race, (in addition to other appropriations).....		1,500 00	
E.—Deepening level between guard lock and Lock No. 20, distance 5 3-5 miles, width 100 feet, depth 1 75=191,664, at 33 cts.		63,242 52	E.—Parts of this level, although below bottom, at other places is much silted up, so that it is believed, an average cutting of 1 foot, 9 inches, will be necessary, to give it the requisite depth, a large part of which is hard materials.
F.—Milleroche and Moulinette culverts. Removing puddling over arches and part of the sides, and substituting concrete, each \$900.		1,900 00	F.—It is proposed to remove the present puddling, from the crown of the arches, and for a distance of, from 10 to 12 feet, on both sides, and afterwards, form a new covering of concrete.
LOCK NO. 20.			
G.—Lowering upper mitre-sill segments, recess platform and, securing walls, &c.	1,850 00		G.—The Estimate contemplates raising the water level, between Locks No. 20 and 19, six inches, sinking the mitre sill and platform, at the tail of Lock No. 20, one foot, which is all the chamber floor will admit of. The prism of the Canal to be sunk, to suit that depth. To rebuild the Lock, would cost, at least, \$40,000.
Do. lower recess platform, apron, and underpinning walls.....	4,000 00		
Unwatering work during its progress.....	600 00		
Removing and replacing Lock Gates.....	700 00	7,750 00	
Carried over		142,125 37	

CORNWALL CANAL.—Estimate for deepening.—Continued.

Description of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
Carried forward.....		142,125 37	
Deepening of canal, between Locks 18 and 19, distance 8316 feet, depth 1.25—28,500 cfs.....	10,010 50		
Banks, additional walling,	1,350 00		
Machinery for raising water on lock.....	3,000 00		
Cost to culvert.....	840 00		
Machinery and contingencies....	1,800 00	17,000 00	
LOCK No. 19.			
Raising Lock Walls with masonry	3,000 00		
Upper mitre sill, recess plat	1,850 00		
Banks on both sides of lock.	350 00		
Digging, altering and replacing	700 00		
Digging waste weir and raceway	850 00	6,750 00	
Banks between Locks Nos. 18 and 19, distance 7656 feet—18500 cfs.....	4,400 00		
Slope wall, &c.....	2,600 00		
Machinery and contingencies....	1,200 00	8,200 00	
LOCK No. 18.			
Taking up and relaying lower lock, recess platform, and apron, walls, &c.....	4,600 00		
Digging work while in pro- cess.....	600 00		
Digging lock walls with masonry....	3,000 00		
Digging, altering and repairing locks.....	700 00		
Digging banks on both sides of lock.	350 00		
Access to water weir and	850 00		
Digging culvert and foundations	1,200 00		
Digging bridge.....	1,300 00	12,600 00	
Digging and strengthening banks, slope, walling, &c.....	2,500 00		
Digging prism of canal, distance 100 feet, depth 1.25— 28 cfs, at 28 cfs.....	8,652 84		
Machinery alterations to head lock property.....	5,000 00	16,152 00	
LOCK No. 17.			
Upper mitre sill, plat- form, &c, and securing walls digging and repairing	1,850 00		
Digging and repairing locks.....	700 00		
Digging walls with masonry...	3,000 00		
Carried over.....	5,550 00	202,828 21	

H.—By increasing the height of the level, six inches, will, to a like extent, diminish the head and fall, at the mills, thus rendering the power leased less effective; should it be found possible to avoid this, without rebuilding the Lock, the sum set down for damages, and raising the banks, will meet the expense of deepening the prism of the Canal.

I.—If it is found indispensable to raise the level above this Lock, as well as lower the bottom, it will be necessary to raise the Lock walls, as well as lower the upper mitre sill.

K.—There being a large amount of water power leased on the level below this Lock, it is proposed to raise the water only six inches, and deepen the reach, one foot three inches, so as to interfere as little as possible with the Lessees. This to be effected in a similar manner as at Lock, No. 20.

L.—Should it be considered proper to maintain the level at its present height, this sum can be applied, towards taking up and relaying the chamber floors, &c.

M.—The level above this Lock being subject to frequent variations, caused by the sudden stoppage, or starting of the mills, renders it necessary to raise the Lock walls, as well as lower the upper mitre sill, further,

CORNWALL CANAL.—Estimate for deepening.—Continued.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
Carried forward..	5,550 00	202,828 22	
Raising Banks on both sides of Lock and between Locks Nos. 17 and 16	650 00		When all the water power leased is brought into use, a regulating weir, will be indispensable.
Additional walling, &c.....	400 00		
LOCK No. 17.			
N.—Raising Lock walls with masonry	3,900 00		N.—The level above and below this Lock, being raised, it will only be necessary to raise the walls, banks, and gates.
Raising Banks on both sides of Lock	350 00		
Removing, altering and replacing Gates	700 00		
Raising between Lock No. 16 and 15.....	300 00		
Additional slope walling.....	400 00		
		4,750 00	
LOCK No. 15.			
O.—Construction and removal of Coffor Dams and unwatering work... ..	3,600 00		O.—In the month of October, 1852, the water on the lower mitre sill, of this, the outlet Lock, varied from 9 feet, 1 inch, to 9 feet, 5 inches, and during other months, in that, and subsequent years of low water, it varied from 9 feet 8 inches, to 9 feet, 10 inches: it is therefore proposed to take up the lower recess platform apron, and mitre sill, and raise them one foot lower, or as much more, as circumstances will admit of, and thus obtain the requisite draught of water, without rebuilding the Lock.
Taking up and relaying lower mitre sill, recess, platform and apron, and securing foundation of walls	5,000 00		
Raising Lock Wall with masonry... ..	3,000 00		
Removing, altering and replacing Lock Gates.....	700 00		
Raising Banks on both sides of Lock	1,400 00		
		13,700 00	
		227,878 21	
Total.....			
Add for Contingencies and Superintendence		22,121 79	
Total		250,000 00	

(Signed,) JOHN PAGE,
C. E. P. Works

Quebec, 23rd January, 1860.

BEAUHARNOIS CANAL.

ESTIMATE of the probable cost of deepening the Beauharnois Canal to 10½ feet on the Mitre-sills of the Locks, and to 11½ feet in the levels between them.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ 5ts.	\$ cts.	
A.—Raising banks on both sides of canal, from Lock No. 14 to 13, distance 31,600 feet=93,628 c. yds., at 25 cts... Additional slope walling, 21,066 lin. yards..... Forming a drain through the church property, 2640 feet long, average cutting, 6 feet, 29,000, at 18 cts..... Alterations to waste weirs and ferry recesses..... Do to regulating weir and Bridge at St. Timothy..... Purchase of land and damages.....	23,407 00 8,426 40 5,220 00 1,600 00 2,000 00 2,746 60	43,400 00	A.—Since the dam at the head of this Canal was constructed, there has been, at all seasons, a sufficient head of water on the upper Gates of the Guard Lock, (No. 14,) to admit of the level below being raised, so as to give a depth of 10½ feet on the lower mitre sill; it is therefore proposed to raise the water in this, as well as all other levels of the Canal. About one-half of the material required for raising the banks, can be obtained from Government land, for the balance, will have to be purchased.
LOCK No. 13. B.—Raising lock walls with masonry, swing bridge, &c..... Removing, altering and replacing gates..... Raising banks on both sides of lock. Alterations to waste weir and race-way leading to and from the same.....	4,200 00 700 00 350 00 1,400 00	6,650 00	B.—The Swing Bridge over the Lock, and approaches to it, must be raised, and also the embankment and walls of the waste weir.
C.—Raising Banks on both sides, between Locks Nos. 13 and 12, distance 10,000 feet = 29,628 cubic yards, at 25 cents!..... Additional slope walling, 6,666 lineal yards..... Purchase of land and damages.....	7,407 00 2,666 40 1,926 60	12,000 00	C.—Land for the purpose of supplying embankment, must be purchased.
LOCK No. 12. Raising Lock walls, Bridge, &c..... Raising Banks on both sides of lock Removing, altering and replacing gates..... Alterations to waste weir and race-way.....	4,200 00 350 00 700 00 1,600 00	6,850 00	
Raising Banks on both sides of canal, between Locks No. 12 and 11, distance 5,220 = feet, 15,464 cubic yards, at 25 cents..... Additional slope walling, 3,460 lineal yards..... Purchase of land and damages.....	3,866 00 1,384 00 1,250 00	6,500 00	
LOCK No. 11. Raising walls of lock bridge, altering lock gates, waste weir, &c., same as at No. 12..... Raising banks on both sides of canal, between locks Nos. 11 and 10, distance 5,100 feet = 14,000 cub. yds., at 25 cts. Additional slope walling, 3,400 lin yds..... Purchase of land and damages.....	..... 3,500 00 1,360 00 1,250 00	6,850 00 6,110 00	
LOCK No. 10. Raising walls of lock bridge, altering lock gates, waste weir, &c., &c., same as at No. 12.....	.....	6,850 00	
Carried over.....	.....	95,210 00	

BEAUHARNOIS CANAL.—Estimate of deepening.—Continued.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	cts.	
Carried forward.....	.....	95,210 00	
Raising banks between locks 10 and 9, 1100 feet=3,850 cubic yds., at 25 cts.	814 75		
Additional walling, 733 lin. yds., & c.	350 00		
Purchase of land and damage	301 10		
		1,465 85	
LOCKS Nos. 9, 8 & 7.			
Raising walls of locks, bridges, altering gates, waste weir, &c., &c., each same as No. 12.....	.....	20,550 00	
Raising Banks on both sides of Canal, between Locks Nos. 9 and 8, 1,225 feet, 8 and 7, 785 feet, and between Nos. 7 and 6, 700feet,=10,000 cubic yards, at 25 cents	2,500 00		
Additional walling, & c	1,000 00		
Purchase of land and damages.....	750 00		
		4,250 00	
LOCK No. 6.			
D.—Construction and removal of coffer dams, and unwatering work.....	4,000 00		D.—During the fall months, at low stages of the river, there is frequently not more than 10 feet water on the lower mitre sill of this Lock, and in October, 1854, there was only 9 feet, 10 inches, for the first half, and 9 feet, 6 inches, for the last half of the month. It is, however, believed that this can be remedied, by taking up the recess platform and apron, and relaying them one foot below their present level.
Taking up and relaying lower mitre sill, recess platform and apron, and securing foundation of walls	5,000 00		
Raising lock walls with masonry.	3,400 00		
Removing, altering and replacing gates	700 00		
Raising and protecting banks on both sides of lock, &c., &c.....	1,400 00	14,500 00	
		135,975 85	
Add for Contingencies, Superintendence, &c.....	.....	14,024 15	
Total.....	.....	150,000 00	

(Signed,) JOHN PAGE,

C. E. P. Works.

Quebec, 23rd January, 1860.



LACHINE CANAL.

of the probable cost of deepening the Lachine Canal, so as to have 10½ feet on the Mitre-sills of the Locks, and 11½ feet in the levels between them.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
Deepening channel way through Lachine, at different places, at lowest known stages of the 500 cubic yards, at \$3,25.....	.....	37,375 00	A.—It is believed that this could be done without any interruption to the navigation, by the ordinary process of blasting and loosening the rock under water, at less expense than to attempt laying the basin dry, means of coffer dams, and pumping.
GUARD LOCK No. 5.			
Construction of coffer dams at head of waste weir and old canal, removal, and unwatering works...	3,500 00		B.—Although the depth of water in the Basin, at Lachine, has been increased several inches, by the extension of the south pier, there is occasionally not more than 10 feet on the upper mitre sill of the guard lock; it is therefore proposed to lower the sill, at least, one foot, and, with a view to maintaining the level below the lock at its present height, it is contemplated to deepen the chamber floor of the lock, which consists of a flat stratum of rock, and to take up and relay the lower recess platform, apron and mitre sills, at a height suited to the proposed depth. From the large extent of water power leased at Montreal and the intermediate Locks, and the volume of water that must necessarily enter the Canal at Lachine, for its supply, it is believed indispensable, that a head of not less than one foot, should be made in the height of the level below the lock.
Relaying up mitre sills, recess platform, and relaying them, lowering floor, securing lock mills, &c.	9,500 00	13,000 00	
ROCK CUT.			
Widening width of cut to 100 feet as low as present bottom, 48,500 cu. yds. at \$1 25.....	60,625 00		C.—The widening of this cut, although not strictly coming under the head of increasing the draught of water in the canal, is of very little less importance to the interests of the navigation. The "cut" is about three-fourths of a mile long, and with the exception of two passing places, is not more than 55 feet in width, or of a sectional area of about one-half what the Canal is at other places. This limited width causes a strong current in the "cut," which greatly impedes the upward passage of large, deep laden vessels, that occupy fully one-third of its cross section: had no other demand been made on the water, than for ordinary purposes of the navigation, this "cut" even at its present width, with fenders on each side, might have accommodated the trade for several years to come; but the quantity of water that must necessarily pass to supply the extent of the mill power leased, renders its enlargement indispensable. The Estimate provides for its being made 100 feet in width, as recommended and approved of about 5 years ago, when part of the work above water surface was done.
Deepening cut to 11½ feet below water surface, 33,377 cubic yds. at \$2 25.....	75,098 25		C.—The bottom of the "cut," at many places, is barely as low as the present mitre sill of the Guard Lock; it will, therefore, be necessary to deepen it, at least, 2 feet, 3 inches, to obtain 11½ feet of water, in the level.
Relaying Quarry refuse and earth to top of ditto, 10,000 cubic yds. at 30 cents.....	3,000 00	138,723 25	
Carried over.....	.....	139,098 25	N

LACHINE CANAL.—Estimate for deepening.—Continued.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
<i>Carried forward</i>		189,098 25	
E.—Deepening prism of Canal from lower end of "Rock Cut," to head of Lock No. 4, distance 19,404 feet, width 88 feet, depth 1,76 = 100,613 cubic yards, at 82 cents	32,196 16		E.—In this portion of the Canal, there are several places where the rock crops out in the bottom, and the material to be removed is generally of a hard nature.
F.—Reconstruction of Culvert.....	6,000 00		F.—As this culvert must be lowered, it is proposed to substitute two cast iron pipes for the present structure.
Securing Bridge abutments at Cote St. Paul	000 00	38,796 16	
LOCK No. 4.			
G.—Taking up masonry of Lock, furnishing additional materials, and rebuilding 4,500 cubic yards, at \$5.....	22,500 00		G.—This Lock is in a condition so unsafe, that under any circumstances, it must ere long be rebuilt, the greater part of the mortar having been washed or forced out from between the beds and joints of the masonry, and when the Lock is full, the water finds its way through the wing walls below the lower gates in large quantities. About 3 years ago, it forced out several of the stones. The following spring, part of the wing walls were taken down, when large holes were found in the interior, branching out towards both the rear and face of the wall.
Removing present foundation and deepening.....	8,500 00		
Providing materials, laying foundation, mitre sills, &c.....	8,000 00		
Excavation, embankment puddling.....	3,750 00		
Unwatering work, alteration to gates and contingencies	3,750 00	41,500 00	
H.—Constructing new waste weir at Lock No. 4.....		10,000 00	H.—Although this work does not properly belong to deepening the Canal, still, it is absolutely necessary, and should be done at the same time that the water is out for the purpose of rebuilding the Lock, &c., &c.
I.—Deepening prism of Canal between Lock No. 4 and 3, distance 9,355 feet, width 80 feet, depth 1,76 = 48,597 cubic yards, at 30 cents.....		14,552 10	I.—It would have been very desirable, had circumstances permitted of raising this level so as to avoid any interference with the culverts passing through it, but the extensive water power leased at Lock No. 4 would be very much diminished in value, by adopting this course; while none of the head gates or works, at Lock No. 3, are suited to any other than the present level. It has therefore been considered proper, to base the approximate estimate on the principle of deepening the Canal.
K.—Alterations to River St. Pierre Culvert.....		7,000 00	K.—The sum set down in the Estimate, is intended to cover the expense of rebuilding this culvert, or of substituting cast iron pipes for the present wooden trunk, as may be deemed most judicious, on ascertaining the actual condition of the work.
L.—Alterations to culvert constructed for passing pipes of Montreal Water Works.....	11,000 00		L.—In order to obtain the necessary depth over the top of this culvert, at the same time leaving the pipes undisturbed, and retaining a like height as at present inside, it is proposed to remove the covering and top, leaving all other parts in the same state as at present, and forming a new top of heavy boiler plate iron, with sides of a lighter description of plate; in short, forming three sides of a tube well rivetted together, and strengthened with angle iron, this to be continued across the Canal and wall into the banks on both sides.
Securing foundation of Brewster's Bridge, bye wash and walling of Railway Bridge, &c.....	2,500 00	13,500 00	
<i>Carried over</i>		314,446 51	

LACHINE CANAL.—Estimate of deepening.—Continued.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
Carried forward.....	.....	314,448 51	
LOCK No. 3.			
M.—Taking down and rebuilding Lock same as No. 4.....	.....	41,500 00	M.—This lock is in a like condition as No. 4, and will require to be taken down and rebuilt.
N.—Constructing new waste weir at Lock No. 3.....	.....	10,000 00	N.—The old lock used as a waste weir is in a very dilapidated condition, no dependance can be placed in its stability;—a new waste weir is therefore indispensable.
Deepening prism of Canal, from Lock No. 3, to Wellington Street Bridge, distance length 2,900, width 90, depth 1,75 = 15,037 cubic yards, at 30 cents.....	4,511 10		
Alterations to culverts same as one below Cote St. Paul.....	7,000 00		
Securing foundation of Bridge abut- ments, &c.....	500 00		
O.—Deepening present basin be- tween Wellington Street Bridge and Lock No. 3—57,000 cubic yards, at 30 cents	17,100 00	29,111 10	O.—The estimate provides for carrying out the principles laid down in the address,—that is to say, making all the basins already constructed 11½ feet in depth; which, it is believed can be done by excavating within 3 or 3½ feet of the dock walls, or as close as will not interfere with vessels. But to make the basins 17 feet in depth, as originally intended, when placing the mitre sills of the two tower locks, so as to have a draught of 18 feet water on them, although not provided for in the construction of the dock walls, would increase the amount of the estimate as follows, 130,000 cubic yards excavation at 30 cents..... \$39,000 Tiling in front of dock walls and contingencies..... 27,000
Add for Contingencies and Super- intendence .....	.....	40,543 49	
Total .....	.....	446,000 00	
			Amount additional..... 66,000

(Signed,) JOHN PAGE,

C. E. P. Works.

Quebec, 23rd January, 1860.

WILLIAMSBURG CANALS.

ESTIMATE of the probable cost of deepening the Williamsburg sections of the St. Lawrence Canals to 10½ feet water on Mitre-sills of the Locks, and 11½ feet in the levels between them.

Situation of Work.	Amounts.	Totals.	REMARKS.	
	\$ cts.	\$ cts.		
GALOP'S CANAL.				
A.—Deepening upper entrance above Guard Lock, distance 1200 feet by 60 wide, by 2 deep = 5333 cubic yards... In this quantity, there is rock 300 cubic yards, at \$3 50.....	1,050 00		A.—The bottom in the distance stated, varies from 8 to 16 inches below the present mitre sill of the Lock, on which, in the summer of 1849, there was room 7½ to 8 feet water, and for a short time it stood at 7 feet, but the extension of the south, or river pier, since that time, has raised the water permanently, one foot. It is therefore believed, that lowering the bottom an overage of two feet, will affect the object contemplated. The rock which is adjoining the Lock, it is proposed to remove by blasting and otherwise, under water, and to dredge out the other material.	
In this quantity, hard clay and boulders, 5,033 cubic yards, at \$1 25..	6,291 25	7,341 25		
GUARD LOCK, OR NO. 27.				
B.—Construction and removal of coffer dams and unwatering work..... Taking up mitre sills, recess platform, &c., and relaying them, lowering chamber floor, and securing walls, &c., &c.....	3,000 00 9,500 00		B.—The sill, platform, and chamber floor, must be lowered fully two feet, to give the required draught at low stages of the river. The foundation is on rock irregularly stratified.	
Removing, altering and re-placing lock gates.....	1,000 00	13,500 00		
C.—Deepening between Guard Lock and head of Lock No. 23, distance 10,000 feet, width 50 by 2.25 = 41,666 yards, mean rate 30 cents..... Widening slopes &c. 20,000 cubic yards, at 25 cents.....	..... .....	12,499 80 5,000 00	C.—At a few places the water is sufficiently deep, but the greater part of the material to be removed is extremely hard.	
LOCK NO. 26.				
D.—Construction and removal of coffer dams, and unwatering work..... Taking up mitre sills, recess platforms, and underpinning walls, &c..... Removing, altering and replacing gates.....	2,500 00 6,450 00 700 00	9,650 00		D.—The water could be raised so as to leave the lower mitre sill of this Lock undisturbed, but the water power, owned and leased there by the parties who have erected an extensive starch factory, a grist and saw-mill, would be very much lessened in value—by so doing, the head and fall being only 6½ feet. It would further be injudicious to attempt drawing the water wholly out of the level below the Lock, (or Junction Canal,) the banks of which, having been made through the river, the seat of them was in some cases partially covered with stone. It is therefore proposed to construct a coffer dam, as provided for in the Estimate.
Deepening prism of Canal, between Lock No. 26 and head of Iroquois Canal, (Junction Canal,) distance 12,910 feet, width 50 by 1.50 = 35,862 cubic yards, at 30 cents..... Securing waste weir.....	10,758 60 441 40	11,200 00		
E.—Deepening Iroquois Canal at different places, 12,000 cubic yards, at 26 cents..... Reconstructing booms through rock cut	3,120 00 1,500 00	4,620 00	E.—Since the construction of the Junction Canals, the water has been raised 1.75 feet in Iroquois section; there are, however, several places where dredging will be necessary.	
LOCK NO. 25.				
F.—Construction and removal of coffer dams and unwatering work.....	2,500 00			F.—In October, 1856, there was only 8 feet 3 inches water on the lower sill of this Lock,
Carried over.....	2,500 00	63,811 09		

WILLIAMSBURG CANALS.—Estimate for deepening.—Continued.

Situation of Work.	Amounts.	Totals.	REMARKS.
	\$ cts.	\$ cts.	
<i>Carried forward</i>	2,500 00	63,811 05	
Taking up lower mitre sills, recess platforms, &c., and relaying them, lowering chamber floor, securing walls, &c.....	7000 00		and in September and October, 1858, there was 15 ft. 7 in., and 14 ft. 9 in. respectively; the foundation is of rock, which, in the chamber, is about the same height as the lower mitre sill—the whole of which, except at the immediate toe of the walls, it is proposed to remove to the necessary depth.
Removing, altering and replacing gates.....	700 00	10,200 00	
RAPIDE PLAT.			
Deepening upper entrance 600x60x 2.50 = 3,333 cubic yards, at 80 cents..	.....	2,666 40	
LOCK NO. 24.			
G.—Construction and removal of coffer dams and unwatering work.....	3,000 00		G.—The sills of this Lock must be sunk about 3 feet, which will necessitate the taking up and relaying of the chamber floor throughout.
Taking up and relaying mitre sills, recess platform, chamber floor, underpinning walls, &c., &c.....	9,500 00		
Removing, altering and replacing Lock Gates, &c.....	700 00	13,200 00	
H.—Deepening between Locks Nos. 24 and 23, distance 18,120x50x2.75 = 92,277 cubic yards, at 35 cents .....	.....	32,296 95	H.—The bottom of this level must be sunk, at many places, fully 3½ feet—but there being a few bays and places where less excavation will be required, the average has been assumed at 2.75; the material to be removed is of a hard nature generally.
Widening curves, slopes, &c., 30,000 cubic yards, at 25 cents .....	.....	7,500 00	
LOCK No. 23.			
Taking up and relaying mitre sills, recess platforms, chamber floor, &c., cost same as No. 24.....	.....	13,200 00	
FARRAR'S POINT SECTION.			
Deepening Canal from upper entrance to head Lock, 3,800x50x2.75 = 19,350 cubic yards, at 50 cents.....	9,675 00		
LOCK No. 22.			
Taking up and relaying mitre sills, platforms, &c., cost same as Locks above.....	13,200 00	22,875 00	
		165,749 00	
Add Contingencies and Superintendence .....	.....	16,250 60	
Total.....	.....	182,000 00	

(Signed,) JOHN PAGE.
E. P. Works.

Quebec, 23rd January, 1860.

I.

INSTRUCTIONS TO, AND REPORT OF THE CHIEF ENGINEER ON PROPOSED NEW LIGHT HOUSES FOR THE RIVER AND GULF ST. LAWRENCE.

DEPARTMENT OF PUBLIC WORKS

Quebec, 10th February, 1860.

SIR,—The Government having under consideration the erection of additional Light Houses in the River and Gulf of St. Lawrence, and as you have visited and examined a great part of the Coast, I have to request that you will prepare a Report on the subject and give your views on the comparative advantages of the various positions. You will also state the order in which you may consider the requirements of the navigation demand their construction, what materials shall be used, and you will prepare an estimate of the probable cost of those, the construction of which you may recommend, assuming that the Government would furnish means for conveying the workmen and materials to and from the sites.

In connection with this you will receive communications that have taken place between this Department and the Quebec Trinity House, the owners and the masters of the Ocean Steamers, and Captain Orlebar R. N. and Mr. Fortin, on the subject of locating the Lights, and you will also receive the correspondence that has taken place with the Light House Boards of Scotland, and the United States.

The places to which your attention is specially called are the following.

Battle Island.	-	-	-	-	Coast of Labrador.
N. E. end of Belle Isle.					"
Cape Bauld	-	-	-	-	Newfoundland.
Cape Norman	-	-	-	-	"
Point Ferolle	-	-	-	-	"
Cape St. George	-	-	-	-	"
Cape Anguille	-	-	-	-	"
Cape Ray	-	-	-	-	"
Point Enragée					
Bird Rocks	-	-	-	-	Gulf of St. of Lawrence.
Bryon Island	-	-	-	-	"
Greenly and Wood Island,	-	-	-	-	W. end of St. Belle Isle.
Murr Rocks and Island	-	-	-	-	Labrador.
Cape Whittle	-	-	-	-	"
Natashquin Point	-	-	-	-	"
Cape Observation	-	-	-	-	Anticosti.
North Point-	-	-	-	-	"
Cape Chatte	-	-	-	-	"
Manicouagan Shoal	-	-	-	-	"

Metis, and such other points as you have visited,

You will also receive a communication from the Government of Prince Edward Island in reference to two Lights proposed to be erected on the East and North Capes of that Island, and you will be good enough after communicating with the Trinity House, to Report on the expediency, or otherwise, of joining in the erection of these Lights.

I have the honor to be, Sir,

Your obedient servant.

(Signed,) JOHN ROSE

Commissioner.

JOHN PAGE ESQ.
Chief Engineer
Public Works.

Quebec, 28th February, 1860.

HONORABLE THE COMMISSIONER
OF PUBLIC WORKS.

SIR,—In compliance with instructions conveyed in your letter of the 10th instant as to the erection of Light Houses on the River and Gulf of St. Lawrence, and Strait Belle Isle, I have the honor to report in order following:

1stly The places visited and their comparative advantages for Light Stations.

2ndly Order of construction recommended.

3rdly Class of materials, &c., &c., with approximate estimate of the cost of the erections proposed to be first undertaken.

In carrying out this arrangement, the most distant place examined will be proceeded first, following with the others in their order.

It is, however, considered proper to acknowledge at the outset, the obligations I was throughout to the Charts and descriptive sailing directions, prepared by Admiral Boscawen, and others, as well as to information verbally supplied by other naval gentlemen, lastly, though not least, to several gentlemen connected with the Trinity Board, Quebec, who accompanied me.

1stly Description of places visited, &c., &c.

S. E. BATTLE ISLAND.

The Battle Islands, on the coast of Labrador, form the South point of St. Lewis Sound, the South East Island of the group, shows, at the extremity both from the S. W. and N. E. and is said to be the first land generally made out by transatlantic vessels bound for Canada, by way of the Strait of Belle Isle. When seen from a distance of a few miles, it has an extremely dark, ill-defined appearance, which forms a striking contrast with the sky, not unfrequently seen within a short distance of it, as was the case on two occasions that I visited the locality.

Although named as if one, it consists of two islands lying close together, between them is a comparatively narrow passage, still sufficiently wide at its north end, to admit of shelter to fishing and other small vessels. The two, including the intervening passage, are about one-half of a mile wide, by three-fourths of a mile long. The East Island is the largest, and may be known, irrespective of position, when viewed from a sea-ward direction, by a rugged sort of mound at each end, and another near the middle, in a N. E. and S. W. course. The latter stands further to the eastward, than either of the others, and was therefore considered as the most eligible position for a light house, of any part of the Island. The point thus chosen stands about 350 feet N. W. from ordinary mark, and 190 feet over the level of the sea. Immediately S. E. of it, the surface has a slight declivity for a distance of 50 feet, then suddenly becomes rough and precipitous to the water's edge, towards the N. E. the surface has an inclination of from 10 to 40 degrees, varying from a tenth to a fifth of a mile, and at about 300 feet from it, in the same direction, there is a fresh water lake of considerable depth, and of fully five acres. (Other small lakes and ponds were observed on the Island, the appearance of which indicated an abundant supply of fresh water at all seasons, for every necessary purpose.)

The Island is chiefly a Granitic formation, the lower part consisting of various kinds of granites, from dark red to light grey,—higher up, the rock has a dark appearance, and is intersected with large veins of quartz, and along the sides and bottom of a ravine on the north-east part of the Island, near a fishing station, are some large masses of pholinite or soapstone apparently stratified, some of which are in detached blocks, of dimensions well adapted for building purposes. The higher points, and that forming the site of the proposed buildings, are of a nature that the action of the weather seems to favor, leaving irregularly shaped protuberances, standing over the general surface, like pebbles in a bank of indurated clay, still it is durable enough for a foundation structure.

There is no suitable building stone on the Island, that could be easier prepared than the granite and clink stone above referred to. The one would, however, answer well for interior work, and the other for any purpose. The granite although expensive to quarry and dress, is well known to possess all the characteristics of good building stone, and its use in such a situation is believed, would be more appropriate and cheaper, than to transport any other class of building materials from a distance, the landing and handling of which, would unavoidably be attended with much uncertainty, great difficulty and expense.

This being common to several other places about to be brought under notice, to avoid repetition, it will be more fully treated of under the head, "Class of materials."

Sand, I was credibly informed, could be obtained in St. Charles River, about 15 miles to the westward, where there is also an abundance of low stunted timber, used for fuel by the fishermen, but so far as I could learn, none of it would be suitable for Building purposes.

A Tower 50 feet in height at the place above stated, would overtop every point in a direction servicable to vessels, and command a visible horizon of at least 21 nautical miles. It would be $22\frac{1}{2}$ miles distant from the Light established on the S. W. point of Belle-Isle, and 18 miles from the N. E. end of that island. A light, if placed here, from the important position it would occupy, should be of the "*First order*," and so as to be readily distinguished from the present one on Belle-Isle, it should be on the revolving principle.

It however appears to me barely possible, that the mariner could derive an equal degree of benefit from a light on this island, as from one on the N. E. end of Belle-Isle, for the reasons hereafter stated.

NORTH EAST END OF BELLE-ISLE.

During high winds from any direction, no safe landing can be made at or near the N. E. end of this island, and the heavy rolling sea that continues long after a gale has abated, is equally dangerous; but after a continuance of moderately calm weather, no difficulty is experienced by small vessels in making Black Lakes Cove, which is formed by two low converging points, at the end of the island, where it is said fishing vessels, frequently ride for the greater part of the summer months. In the event of this point being selected as a light station, some difference of opinion may exist regarding the best position for the light, that is to say, whether it should be placed principally for the benefit of the North passage, which is the route preferred by vessels entering the strait, as the current, sets in through it and out on the south side of the island, or be placed so as to command the greatest range in an easterly direction also, if the former was the sole object, the *North Point*, or *Point Misery* would be the proper site.

But in my opinion, if a Light House is built on this end of the island, it should be placed so as to be of the greatest possible benefit to vessels in every direction, as it would then, to a very great extent, do away with the necessity of a light on Battle Island, while as a leading sea light, it would be in a more advantageous position than the latter, being fully 10 miles further east, in a seaward direction. Acting under this impression, a point at the N. E. end of the island, about 360 feet over the level of the sea, was selected as the site for the necessary building. Point Misery is about the same height, and bears W. N. W. from it, and a continuation of the same line would pass near Lark Island.

A light on this point could be seen in the north passage, from an outward bound vessel, shortly after losing sight of the light on the south west point, and when from 5 to 6 miles off, opposite the centre of the island, both lights could be seen at one time.

Thus all the objects connected with the north channel, that could be gained by a light on the north point, would be obtained by one at the place selected, while it would be nearer, and mark out with a greater degree of certainty, a reef that extends out two miles in a N. E. direction from the island, and it may be added, although a matter of less importance, it would be more accessible for the transportation of materials, and the necessary stores from the landing place, than either of the other points referred to could possibly be made at any thing like a moderate outlay.

From the cove, a roadway can be formed at comparatively little expense, for a height of about 220 feet over the sea, by following a narrow ravine, which rises gradually at the rate of one in five or six, for the first 75 feet in height, when it increases to a width of about 45 feet at bottom, with an inclination of one in nine or ten to the elevation above stated.

The upper part, although at places steep and as a whole rugged, can be easily ascended by following a circuitous upward direction, along which a passable road might be made at a moderate expense.

Although little else is to be seen at the extreme end of the island, than huge masses of bare sterile rocks, cut here and there into deep and all but impassable gorges, the view towards the interior, is diversified by a group of small conical hills and flat valleys, where patches of short coarse grass and furze, may be seen in a few sheltered corners; these are however the only signs of vegetable life, except the moss on the rock, still as a whole, it presents a far more cheerful aspect than the south end.

The rock is of a granitic character, the lower part is of a light grey color, but gets darker towards the top. In several of the ravines masses of green stone were found, some of which occur in small well shaped blocks.

An abundance of fresh running water may be obtained from a ravine, at about 160 feet below, and within 900 feet of the proposed site, which with the stone above alluded to, are all the island can supply towards the necessary erections.

Salt water sand can be procured in Chateau Bay, on the Coast of Labrador about 24 miles distant.

A Tower 40 feet high, with suitable dwelling houses for the keepers, would answer every purpose.

A light at this place being assumed as an efficient substitute for one on Battle Island, it should be of the "first order," and made revolving to distinguish it from the present fixed white light, on the S. W. end of the Island.

CAPE BAULD.

The advantages proposed hitherto to be gained by the advocates of a Light on Cape Bauld, although for general purposes already fully met, by the selection of a more advantageous position on the South West end of Belle-Isle, still having visited the place, a short description of it is submitted, as called for by my instructions.

The Cape is a well known prominent headland on the North point of Quirpon Island, and is the N. E. extreme of the Coast of Newfoundland. It is 14 miles south of Belle-Isle and 18 miles east of Cape Norman.

The place considered the most suitable site for the necessary erections, in the event of its being decided to establish a Light there, is on the highest and most Northerly point of the Cape, 50 feet back from the edge of the cliff, N. E. 750, and S. 500 feet, from the water line, and about 240 feet over the level of the sea. 800 feet towards the interior it attains an elevation of 330 feet over the sea. The North and West sides are bold but exceedingly rough. On the East is a large Bay, bounded by Split Point; in this direction the inclination is less abrupt, but it is intersected by deep chasms, which render the ascent difficult, unless by following a zig zag course that more than triples the distance; still a passable road might be formed on that side, at one-tenth of the expense it could be done on either of the other sides.

It is a stratified lime stone formation of an extremely coarse texture, especially the upper 50 or 60 feet, which is much weather worn, and larger masses of it lie along the face of the cliff partly decomposed, but a more compact and better class of stone, can be found lower down, which, when broken, has a fracture resembling some classes of dark grey granite, so that there is every reason to believe an abundance of good stone, could be found in the vicinity.

There are some small fresh water lakes a short distance from, and about the same height as the place selected, and a spring which appeared to be continuous, was found in the immediate neighborhood. Salt water sand is said to be abundant in Noddy or Quirpon Harbor, from 4 to 5 miles distant.

CAPE NORMAN

This Cape is, with the exception of Quirpon Island, the most Northern part of Newfoundland; seen from the Eastward, it appears to stand out prominently, but from the Westward it can scarcely be distinguished from other parts of the so called "Straight" Coast. It appears nearly level on top, and moderately high.

The Light House on the S. W. end of Belle-Isle, bears from it N. E. $\frac{1}{2}$, E. 24 miles. The light on Point Amour bears W. by S $\frac{1}{4}$, S 36 miles, and the opposite coast of Labrador is distant 14 miles.

To promote the safe and facile navigation of the Strait, no point, in my opinion, could be more advantageously selected for the erection of a Light House than Cape Norman, and it is admitted, by all the seafaring gentlemen, with whom I have had an opportunity of conversing on the subject, that it would in point of importance be second only to those already established. A fact which will be evident to any one, on bearing in mind, that, in moderately clear water, a vessel, from the time she entered the Strait, at either end, would be constantly in range of one or other of the Lights, consequently at all times, her relative position could be correctly ascertained.

The site fixed upon, is on the most northerly and highest point of the Cape, 80 feet south from the edge of an all but perpendicular precipice, 60 feet high, (about 400 feet long in an East and West direction,) and 90 feet westerly of a very remarkable weather worn high rock, that at a short distance resembles the ruins of a large dilapidated building; immediately to the south of it, is a patch of sand 50 feet square, and from 8 to 12 inches deep, overlying the rock. This sand is, however, of too fine a grain for building purposes.

About one-fourth of a mile to the South East, is a plot of ground several acres area, apparently of good soil, and well sheltered, which might be of great service to the keepers as a garden. This is the only spot fit for such a purpose, observed at either of the places so far brought under notice.

There are a few ponds of fresh water in the vicinity, which appear as if they might supply sufficient water for ordinary use.

Salt water sand, it is said, can be obtained in Pistolet Bay, a few miles to the Eastward.

The whole of this part of the coast consists of lime stone, the upper or exposed parts of which, especially the Cape, presents an extremely rough, weather and water worn appearance, except about 400 feet in length of the face of the cliff, which is as sound as if only recently exposed to the weather. The lower part lies in regular and uniform strata, of from 8 to 30 inches in depth. It is of a dark blue color, sound, and of as good a quality for building purposes, as most classes of lime stone; it can be easily quarried, dressed and delivered on the spot required.

A Tower 65 feet in height, with a "third order" flashing light might be placed here to distinguish it from the lights at Point Amour and Belle-Isle, both of which are fixed.

The erection of a Light House on *Greenly* or *Wood* Island at the Western entrance of the Strait of Belle-Isle, having been previously urged on the Government, by parties claiming a knowledge of the locality and wants of the navigation, both these islands were visited, and their relative positions ascertained with care, although in my opinion, no necessity whatever exists for a light on either, except it may be for the benefit of the Fisheries, and very limited coasting trade, connected with them and *Bradore Bay*, especially if *Point Ferrollé* on the opposite side of the strait, is selected for a light station. A short description of both islands is however submitted.

GREENLY ISLAND

Is on the Labrador side of the entrance of the Gulf through the strait, about 13 miles W. S. W. from Point Amour, the present light station, and lies fully one-half mile to the North of a line between the latter and *Wood* Island. It is low and unproductive, and about $\frac{1}{2}$ of a mile across, in either direction.

The point fixed upon in the event of a light being established there, is near the S. E. end of the island, on a plateau 50 feet over the level of the sea, where the rock is covered with sand to the depth of 3 feet,—it is about 650 feet west, and 500 feet north of high water lines, and 300 feet from it, in a northerly direction, the surface is fully 30 feet higher, but a light placed so much to the north, as to be on this high ground, would be obscured in an easterly direction by Wood Island.

The island consists wholly of red sand stone, of a close grained texture, lying in blocks of every size and shape, suited for building purposes. Salt water sand of a sharp angular grain is abundant on the spot, and there are numerous large springs of fresh water, on different parts of the island.

WOOD ISLAND.

This island lies further to the South, and is fully a mile to the Eastward of Greenly Island; it is about one mile wide in an East and West direction, and nearly two miles long; moss and coarse grass are its principal vegetable productions.

The S. W. point of the island, stands about 50 feet over the sea, and has a gradual inclination towards the North of 80 feet, in a distance of about 800 yards; thence in a North-easterly direction the surface is fully 200 feet higher.

It is a sand stone formation, similar to Greenly Island. Sand, in like manner, is abundant, but fresh water appears to be less plentiful.

POINT FEROLLE.

This headland is on the Newfoundland side of the Gulf, near the western entrance, through the strait lying S. S. W. $28\frac{1}{2}$ miles from Point Amour, $21\frac{1}{2}$ miles from Greenly Island, and N. E. by E. 22 miles from Point Rich; it is flat and of moderate height, but stands out prominently, and appears like an island when seen from a distance: it is, however, connected with the main land by a very narrow neck, which separates the Bay of St. John from New Ferolle Bay.

A short distance back from the shore, it is wooded with spruce and other trees, some of which are of good size, but they are generally small and stunted; fresh water ponds are abundant in the interior.

The place marked out as the most advantageous site for a Light-house here, is 55 feet over the level of the sea, 200 feet south from high water mark, and about one-third of a mile from the extreme S. W. point, which forms the N. E. side of the Bay of St. John, and within a short distance of three fresh water ponds, one of which is fully $2\frac{1}{2}$ acres area. In a S. W. direction from it, the ground rises from 5 to 6 feet, and to the N. E. it diminishes in height, and the coast trends towards New Ferolle Bay.

The point consists principally of dark blue limestone, the surface of which, where exposed, is much weather-worn, but the rock being of good quality, there is every reason to believe, that sound and durable building stone, of any dimensions, can be found a few hundred feet back from the margin of the sea.

At a few isolated places along the shore, small patches of sand were observed, but not of a class suitable for building purposes. I was, however, informed by some fishermen, who reside on the east side of the point, that salt water sand was abundant, in both St. Margaret and St. John's Bay.

A tower 45 feet in height, fitted up with a "second order" light, would, in my opinion (in which many intelligent naval gentlemen concur), be of more importance and service in promoting the safety of the navigation, than one on any other place that could be selected at or near the west end of the strait of Belle Isle. Distinguishing characteristics will be referred to hereafter.

The erection of an efficient light near the S. W. extremity of Newfoundland, as a guide to vessels, passing by the south entrance to the Gulf of St. Lawrence, has always been re-

garded by mariners and others, more or less conversant with the navigation by that route, as one of the most *important* that could be established. It was therefore considered proper to examine all the different places, along the coast, that have been from time to time recommended as eligible positions for it, each of which will claim attention in order following.

CAPE ANGUILLE.

Forms the S. W. point of St. George's Bay, and lies 18 miles N. $\frac{1}{2}$ E. from Cape Ray. Its summit, not less than 550 above the level of the sea, is closely wooded with a variety of trees, principally of small growth, but not of that stunted appearance common to those along the northern part of the coast.

The side next the Bay is precipitous and bare, for a height of from 250 to 300 feet over the water—towards the west the acclivity at the extreme point is regular but steep, and recedes in a S. easterly direction, leaving a triangular flat of low ground along the shore, increasing in width towards Cod Ray harbor, which lies about 2 miles south of the Cape.

In case of it being decided to construct a light house on this part of the coast, two places were examined, either of which might be considered as presenting a favorable site.

One is on the S. W. point of the plateau above referred to, which, although 25 feet over the water surface only, stands more seaward, than any higher position that could be chosen.

The other is on the extremity of the cape, at an elevation of about 250 feet over the sea.

A light at the place first mentioned would possess the advantage of being more accessible, and less liable to be obscured by fogs, than one on the higher part of the Cape, but the latter would have a more extensive range, and in that respect may be fairly considered as the preferable site. Strictly, there would be little or no difference in the actual outlay required at either place, as the greater height of tower necessary on the less elevated ground, would, as regards expense, be fully counterbalanced by the cutting and formation of a road, as a means of access to, and around such buildings as might be erected on the higher ground.

This place as already stated, is on the extreme point of the Cape and may readily be known, from its being on a small flat, near the top of the unwooded patch, on the face of the mountain, remarkable at a short distance for its triangular shape, bright green color, and uniform appearance.

A Light Tower there, from 35 to 40 feet high, would answer every purpose, on which a good light, in the ordinary state of the atmosphere, could be seen from the deck of a vessel a distance of at least 25 miles.

A roadway, with an inclination of one in four or five, could be formed, (although at a considerable expense) by following a zig zag upward course, along the S. W. west side of the green patch above referred to.

Timber for fuel and ordinary purposes is abundant, and there are several running streams of fresh water, at distances of from one-half mile to a mile respectively, from the proposed site.

The lower part of the cape consists of a light gray close grained granite rock, well adapted for building purposes. There is an abundance of salt water sand in St. George's Bay, and it is said it could also be obtained in Cod Ray harbor.

Point Enragée and Duck Island.

This point is low, rocky and bare, and can scarcely be distinguished from other parts of the coast until close up with it. On the east, "Rocky bay" gives it the appearance of a greater degree of prominence. On the west, there is nothing remarkable, except that the same rugged coast trends slightly towards the N. W. for a distance of about three quarters of a mile, where the rock disappears; thence to Cape Ray the shore is of sand, *alternating in low flat beaches and high banks*, around a large deep bay, where it is said ships *occasionally come to anchor*.

The point lies S. S. E. about $4\frac{1}{2}$ miles from Cape Ray, and appears inland in a line between it and Duck Island, which lies in a south easterly direction, about $1\frac{1}{2}$ miles from Point Enrag  , and is very apt to be mistaken for it, from the deck of a vessel a few miles off.

This may account for the Point having been recommended as a site for a light-house ; but although it is the most salient point of the main land, it certainly appears, when on the spot, to be within range of Duck Island and the coast to the eastward, and as if a light on it, would have the disadvantage of being eclipsed near the shore, in an easterly direction, by the high islands south of Grand Bay.

It is about 25 feet above the level of the sea, and consists of granite through which large veins of trap run in every direction, the surface is very rough and irregular, except a space of about 40 feet square, within 150 feet of the extreme point. This level space is considered the best site for the Tower, in case a light is placed there. In the vicinity there are several fresh water ponds.

It however appears to me, that Duck Island is the most eligible position for a light house in that neighbourhood, as nothing could obscure it in any direction, serviceable to inward bound vessels, and it could not be shut out from view, except by Cape Ray, to those outward bound.

This island is also of a granitic character, the stone of a light grey color, close grained, and well adapted for building purposes.

It is from 10 to 12 acres area, covered with a thick growth of moss, with occasional patches of short coarse grass.

A few fresh water ponds were observed, but none of them were large enough for any useful purpose ; their capacity might, however, be increased at a small expense, to hold water sufficient for ordinary use.

Salt water sand can be obtained in " Rocky Bay," of which the island forms part.

The place marked out as the site for the necessary buildings, if decided to make this a light station, is on a flat near the S. E. side of the island, 25 feet over the sea, 300 feet back from the water line, and 300 feet east of a small bay, about 150 feet wide, deep inside, but barred at the entrance by sharp pointed rocks.

CAPE RAY.

The extreme point of this cape, is about two-thirds of a mile wide in an east and west direction. It is flat and bare, with the exception of the S. W. side, and part of the middle, which are covered with dwarf spruce trees, closely matted together, seen from any point of view, the Cape in connection with the land lying to the northward, is very remarkable, near the shore, it is comparatively low, but about two miles inland, is a conical hill (*called the sugar loaf*) not less than 600 feet high, a little further to the north, is a mountain that rises still higher, which, on the N. E. side, appears to be almost perpendicular, and quite flat on top ; between this mountain and the large " Sugar loaf," are two other separate conical hills, of less height, which in clear weather, can be seen at a great distance.

The place selected and marked out as the most advantageous position for the erection of a Light Tower, is about the centre and highest part of the Cape, 85 feet over the level of the sea, and 1,000 feet north of water mark, and at the place referred to above, as covered with dwarf spruce. The top of the " East Sugar Loaf" bears from N. E. by N.

The whole Cape is a granite formation ; where the surface is flat, it is generally covered with from two to three feet of soil. The stone are of a close compact texture, well suited for structures that should be of a permanent nature. Fresh water for any purpose can be obtained, from running streams in the vicinity. Salt water sand may be had in the Bay on the N. E. side of the Cape.

Having thus referred to the different places, examined on this part of the coast, I submit that in the event of two Light houses being built, one of them should either be on Duck Island or Point Enrag  , and the other on Cape Anguille. But if one is deemed sufficient to meet the wants of the navigation, in that case Cape Ray may be considered the preferable position.

Attention is drawn to this, from its having been urged that few shipwrecks or casualties of that nature were ever known to have taken place in the immediate vicinity

of Cape Ray, but that they had been of frequent occurrence on the coast, at and Eastward of Point Enragée, and in St. George's Bay, consequently that these are the places for light stations.

In reply, it may be said that a light on Cape Anguille, would be of no service whatever to an inward bound vessel, until fully up with Cape Ray, further, that the wrecks which have occurred at, and in the vicinity of St. George's Bay, may be attributed fully as much to masters of vessels, hesitating to make free with the "Bird Rocks," as to any other cause, and that in order to give these known dangers a wide berth, they stand well to the north, when it frequently occurs in case of dark heavy weather, together with the set of the tides, that for several days the position of a vessel cannot be correctly ascertained; hence St. George's Bay is sometimes taken for the passage South of Cape Ray.

It is however, generally believed by seamen that occurrences of this nature, would be less frequent if a light was established on the "Bird Rocks," as vessels bound to and from Canada, could then stand boldly on their course, which lies a considerable distance to the S. W. of St. George's Bay.

Relative to a light at or near Point Enragée, it may be said, that although it would be more serviceable there, in an easterly direction, it would be in a less advantageous position, to vessels outward bound, especially if to the north of their course, as the light would in that case be eclipsed by Cape Ray; it is therefore believed that if placed on the latter, it would be of more general utility.

ISLAND OF ST. PAUL.

It having been intimated that the light on the S. W. end of this island, might be removed to a more eligible position, the place was visited with a view of ascertaining the nature, and condition of the works, of which the following is a short description.

The Tower is a wooden structure, of an octagonal shape, covered with shingles all round, and painted white; it has stood fully 22 years. The light revolves, and the apparatus is constructed on the catadioptric principle; it is in good order, appears to be well kept up, and shews a good light.

There is a fog bell kept in motion by clock work, connected with the Tower, this the keeper set in operation in my presence, but the bell was not heard aboard of a vessel, lying from $1\frac{1}{2}$ to 2 miles off the island.

On fully considering this question, I am of opinion, that the expense of taking down, and again fitting up the lighting apparatus, which is all that could be of use, would amount to full as much as it is worth, apart from the propriety of removing a light so long established, and well known to mariners.

BIRD ROCKS.

These dangerous rocks are situated in the Gulf of St. Lawrence, all but in the direct track of vessels passing to and from Canada, through the channel S. W. of Newfoundland.

In passing them, it is generally recommended to stand well to the eastward, but occasionally vessels pass between them and Bryon Island, the east end of which is about $10\frac{1}{2}$ miles to the westward of the N. W. or little "Bird Rock," and from the latter the east point of the Magdalen Islands is distant $16\frac{1}{2}$ miles.

The weather having been moderately calm, for some time previous to our visiting this part of the Gulf, hopes were entertained that little or no difficulty would be experienced in landing on the largest of these islets, but shortly after passing the island of St. Paul, a light breeze sprung up, which continued to increase as we approached the place; it was therefore decided to proceed towards Bryon Island, and anchor there until the following day. The wind having abated during the night, we left next morning for the Bird Rocks, but the sea, comparatively smooth at a short distance off, was found to break on them with such force as rendered it unsafe to approach closer than to within from 80 to 100 feet of either side, this being the case, it was considered best to make such observations, as the circumstances then admitted of, without waiting longer for the purpose of landing,

especially as we had been credibly informed, that weeks might elapse before this could be effected.

Admiral Bayfield, in the sailing directions prepared by him, describes these islets as follows.

"The Bird Rocks are of coarse red sand stone or conglomerate, in strata dipping very slightly to the S. W., and are constantly diminishing in size from the action of the sea. They present perpendicular cliffs on every side; yet, it is possible to ascend with great facility in one or two places, but there is no landing upon them, except in the calmest weather. Every ledge and fissure of the cliffs is occupied by gannets, and the summits of both rocks are literally covered with them. The white plumage of these birds give these rocks the appearance of being capped with snow, and renders them visible through a night glass, in a clear moonlight night, from a distance of 7 or 8 miles.

"The two Rocks bear from each other N. N. W. $\frac{1}{2}$ W. and S. S. E. $\frac{1}{2}$ E., and are about 700 fathoms apart. Sunken rocks leave only a boat passage between them. The South Easternmost is the largest and highest, though scarcely 200 fathoms long, and not more than 140 feet high above the sea."

To the above general description of the largest islet may be added,—the West and North sides, round to the N. E., are the highest parts of it (about 140 feet over the level of the sea,—the S. W. angle is from 30 to 40 feet lower, and the top of that place has a gradual inclination upwards, and is covered with green moss or short grass.—At several places around the foot of the islet, are large masses of rock, of a similar character and appearance as the sides of the precipice, some of which are partly over the water.

The upper part of the sides generally falls back from 40 to 50 feet, the greatest inclination being immediately at the top: but on the N. E. side, in an indent, of from 30 to 25 feet in depth, and about 160 feet in width, the face of the rock seems to be all but perpendicular, and at the S. W. corner, apparently the only accessible place, the acclivity is less than elsewhere, and the strata of the rock is so stepped off, that ascending it there does not seem so formidable a matter, as to effect a safe landing on it.

The Rock, although a sand stone formation, appears to be of a hard nature; still the incessant washing of the sea must be gradually wearing it away, but the smooth solid appearance of the lower part of the sides, indicate the process to be slow.

The top is completely bare, and those who have been on it, say there is no fresh water, except what may lodge in the crevices of the rock during rain storms.

In short, it presents every difficulty that can well be imagined, to the landing of such materials as are necessary for the erection of a Light House, and notwithstanding anything that could be done, to facilitate that object, the place would be accessible only during a continuance of calm weather, which, in that vicinity, is generally of short duration, and always uncertain, as frequently heavy seas accompany a dead calm, either before or after a gale. Although these difficulties and unavoidable delays would be found extremely perplexing, still I am of opinion that, with proper arrangements and a suitable equipment of vessels, judiciously managed, the erection of a Light House on the S. E. islet, could be successfully accomplished.

All the captains and masters of vessels with whom I have had an opportunity of conversing upon the subject, have expressed it as their opinion, that the erection and maintenance of a good light at this place, would be of more benefit to the navigation, than any one that has been or could be built, on the ocean route of the St. Lawrence.

All further agree, that the dread of making too free with the Bird Rocks, has led to several more shipwrecks and disasters elsewhere, than ever occurred directly on them, and that the greater number of casualties of that nature, which take place on Bryon and Magdalen Islands, and along the Western coast of Newfoundland, may be attributed to a reluctance on the part of masters of vessels, to stand clear of these dangerous "rocks."

The following statement of shipwrecks &c., that took place between the years 1845 and 1850, was furnished by Mr. Wayght, a gentleman who at the time of our visit resided on a Island, viz:

10 Vessels wrecked (gave their names)	} Off Bryon Island.
1 do. driven ashore, but got off in 24 hours,	
2 do. abandoned at Sea,	
6 do. wrecked,.....	
4 do. do.....	
	Magdalen Islands.
	Bird Rocks.

It is not however to be expected that this list, made from memory, contains a full catalogue of the disasters, that have taken place within the dates stated, as no doubt shipwrecks have occurred within the same periods, on the western coast of Newfoundland, and some, it may be, of which not a single trace was left, whose fate may have been vaguely chronicled as "foundered at sea."

Without presuming to say to what extent such casualties would be avoided, by establishing a light and proper signals, in case of "Fog" or snow storms on the "Bird Rocks," it may fairly be inferred they would be greatly diminished, thereby creating not only such a degree of confidence in the St. Lawrence navigation, as would tend to lessen the rates of Insurance, of both vessels and cargoes,—but what is of far greater consequence, it would be a step in the right direction towards promoting the cause of humanity, by ameliorating the dangers to which shipping of all classes are exposed, and might be the means of saving many valuable lives from sudden accident, and the still more dreadful calamity of a lingering death, from starvation aboard of a foundered vessel.

But the great difficulties to be encountered, and outlay necessarily required in the first instance, together with the future maintenance of a light on the "Bird Rocks," are questions that naturally lead to the enquiry, whether a light would not serve nearly, if not altogether, as good a purpose on the east end of Bryon Island.

This, there is good reason to believe, would not be the case, as a light station on any point that could be selected there, it is to be feared instead of being a "beacon of safety," would have a tendency to draw vessels on to the very danger that should be avoided: while the indispensable alarm signals during dark, hazy weather, would be of little or no service whatever, unless it be assumed that the narrow passage between that Island and the "Bird Rocks" is equally safe, as the one to the eastward of the latter. But this no nautical gentleman to my knowledge admits, neither does Admiral Bayfield or any other Hydrographer recommend it.

The question is therefore looked upon as disposed of, and the S. E. Bird Rock understood to be the proper place on which the light should be erected.

Acting under this impression, and considering fairly all the known circumstances connected with the prosecution of such a work, I am of opinion that in a situation so isolated and remote, where the landing of workmen, provisions for their use, and materials for the structure, would be exposed to so much risk and delay, the prudence if not the practicability of erecting buildings of the ordinary class, may fairly be questioned. At all events there can scarcely be a doubt, but that the object could be more expeditiously, and economically effected by an iron structure, such as could be fitted up and perfected before leaving the establishment at which it was made, taken apart and transported to its destination in pieces that could be easily handled, and when safely landed, would require only to be refitted, and secured to the rock.

A house for stores, and the keeper's accommodation must also be provided, built either of iron or wood,—the former, to guard against accidents, would be preferable. A tower of from 25 to 30 feet in height, would be sufficient to enable the light to be seen from the deck of a vessel, when within one-third of a mile of the rock.

The objections generally made to the use of iron as a principal material for *light towers*, can scarcely be said to bear on this case,—the structure itself being low, it would be subject to little or no vibration from the action of winds, and, being in a great measure beyond the reach of salt water, it would not be liable to oxidize, from any other cause than atmospheric influences. Iron buildings might therefore be classed as permanent structures, when used in such a position.

These remarks although properly coming under the head of "class of materials" are submitted in connection with this exceptional case.

Bryon Island.

This island as already stated is situated 10½ miles South Westerly of N "Bird Rock." In that distance it lies three miles further to the south, and fully nine miles south of a line that touches the Birds, and passes midway between Cape Rosier, and the Island of Anticosti on the N. W. and within 5½ miles of the Island of St. Paul on the S. E. Otherwise, that it lies a considerable distance, south of the track of the vessels, which leave "Birds" to the westwards, as recommended by Bayfield and others for large ships.

The Island is fully four miles long in an easterly and westerly direction, the breadth varying from a half to one and a quarter mile. It consists principally of red and grey sandstone, part of which is of an exceedingly brittle, and shaley nature, and principally covered to a depth of from 10 to 15 inches, with red ochereous clay. The rock forms perpendicular cliffs, with few exceptions, all around the Island.

The low undulating hills of the interior, are partly wooded with spruce and poplar, and when clear, the surface is closely covered with good quality of native grass, which affords good pasturage for cattle.

Mr. Wayght, the gentleman before referred to, has an extensive tract of land under cultivation, which produces excellent crops of oats, barley, peas, and spring wheat, besides a large dairy and nearly 100 sheep, &c. &c

In the event of its being selected for a light station, I consider the facilities for its erection and maintenance, are better than at any other place along the whole line of coast visited, whether viewed in reference to materials, or the means of provisioning the workmen and subsequently the keepers.

Two places were examined as more or less advantageous sites. One of these is on the east point of the Island, about 60 feet over the level of the sea, which is the nearest to the Bird Rocks, of any place that could be selected short of being on one of them, but it would have the disadvantage of being eclipsed by higher ground in a Westerly course. This is however of less consequence, as it would be open in all serviceable directions.

The other is on the north side of the Island, about 1½ miles from its eastern extremity, and immediately north one half mile of a small cove, opposite which vessels find good anchorage and shelter from north and west winds. This point is 200 feet over the level of the sea, and one quarter of a mile south of water mark.

A light there would possess the advantage of being visible in every part of the horizon, and command a greater range, than if placed on the less elevated ground at the east point, and in these respects might be considered the preferable site, but on the other hand it would be more liable to be enveloped and obscured by fog.

A good light at either of these places, would be useful on many occasions, but as before stated, it could not in any respect be considered as an efficient substitute for one on the Bird Rocks.

Attention is drawn to this Island principally as being the nearest, if not the only place, where those engaged in the construction of a light house on the "Birds" and subsequently the keepers can obtain the necessary supplies of fresh provisions, vegetables, &c.

GREAT MECATTINA ISLAND

This island is on the coast of Labrador, 73½ miles in a south-westerly direction from Greenly Island, at the Western entrance of the strait of Belle Isle, it stands out fully 2½ miles from the main land, the intervening space being known as Mecattina Harbor.

The Island is large, completely bare, and not less than 500 feet high in the centre, it consists of granite traversed with deep chasms and trap dykes, which, together with its relative position to the main land, presents an appearance so remarkable, as to be readily distinguished from other parts of the coast.

On the east and south, it is surrounded with a number of small islands and rocks, the principal of which are Treble, Murr islets and rocks and Flat Island. These forming the chief dangers in this vicinity, their relative positions were carefully examined, and the place subsequently fixed upon as the most advantageous site for a light house was on

Flat Island, which lies about 3 miles seaward of the south point of great Mecattina Island. It is about three quarter of a mile diameter, including a deep indent on the east and west sides, which form well-sheltered coves easy of access to small vessels, especially the one which opens to the N. West.

The island, like all others on this part of the coast, is of a granitic character, the rock generally has a reddish tinge, except along the side of a gorge, that runs in an east and west direction through the island, where it is of a light grey color.

It is completely bare, with the exception of a few sheltered places, which are covered with short coarse grass. Several fresh water ponds were observed, generally of small area, but two of them were found to be of considerable depth, and appeared as if they contained water throughout the year.

Salt water sand is said to be abundant at "Sandy Cove" in Meccatina Harbor.

The place selected as the most suitable for the erection of the necessary buildings, is the highest level spot on the S. W. side of the island, 85 feet over the level of the sea, 140 feet south of the gorge above referred to, 240 feet north and 750 feet in a north easterly direction from water mark.

A Light on this island would possess the advantage of being nearly midway between the western entrance of the Strait of Belle Isle, and the light station proposed to be established in the vicinity of Cape Whittle, and would stand about 5 miles to the northward of a line between these points.

It is believed a Tower 50 feet in height, with a "second order" light, would be sufficient for every purpose.

CAPE WHITTLE.

This Cape is on the Labrador side of the Gulf of St. Lawrence, 61 miles in a South Westerly course from Great Meccattina island, it is the most salient point of the coast, and the shores on both sides of it are comparatively low, presenting an outline so little diversified, that at a few miles distance, it is barely possible to distinguish one part from another.

On the Southwest and south, round to the East, the Cape for several miles outwards is shut in by innumerable small islets and rocks, principally low, and scarcely perceptible until close up with them, which together with the course of the shore on each side, makes it one of the most dangerous places on that part of the coast.

In the sailing directions for the Gulf and River St. Lawrence prepared by Admiral Bayfield, this place is referred to as follows: "There are many small rocks above and under water, off the southward and westward from Cape Whittle. The two outermost of these, which are half tide rocks, are distant from the Cape $2\frac{1}{2}$ miles, and are called the Whittle rocks. All these rocks are steep, with from 20 to 40 fathoms water between them."

In reference to the so called "Southmakers Ledge" he also states: "This dangerous Ledge bears from Cape Whittle (the S. W. extreme of Lake Island) S. E. $\frac{1}{2}$ E $6\frac{1}{2}$ miles: but the Cormorant Rocks lie directly between them, leaving a channel between these rocks and the Ledge nearly $2\frac{1}{2}$ miles wide, &c., &c. There is no channel between the Cormorant Rocks, or between them and Lake Island, excepting for small schooners, whose crews know the position every ledge."

The isolated and dangerous position of this Ledge is however much more obvious, on enlarged copies of "Naval Charts," than from any description that can be given, and it is still more convincing than either to be on the spot, and there observe its relative position to the Islands and coasts, from all of which it is distant fully 3 miles, lying considerably to the southward of either, and so low as scarcely to be seen until all but alongside of it, and at the same time observe that it is nearly opposite a point, where the coast suddenly changes from a S. W. course, to one almost directly West.

The Rock itself consists of compact *granite*, worn as smooth as glass by the incessant rolling of the waters. Its top surface is 130 feet long, 65 feet wide at one end, and 35 feet at the other, about 35 by 45 feet at the East end, it is within a few inches of being level on top, and at the time of our visit, was $5\frac{1}{2}$ feet over the water; the West end is lower, and, between the high and low parts, there is a gully from 10 to 15 feet wide, the bottom of which was then about 18 inches below the water surface.

From this description of the Ledge, it will be seen it presents a surface sufficiently large, for the foundation of a Light Tower, and it will also be evident that if one was erected there, it would effectually point out the rocks and reefs that should be avoided, being itself on the most seaward, and consequently the most dangerous of all.

While it is equally certain that any structure, placed in a portion so exposed, must be of the most substantial character, to be capable of resisting the shock of the waves, (unbro-

ken by surrounding reefs,) and the impact of heavy bodies, such as timbers or spars, thrown against it by the sea.

The materials used must therefore be of a solid and compact nature, in large masses, well fitted, and secured to each other, and to the rock underneath, in short, a difficult and expensive class of work would be indispensable, with every drawback that can well be thought of, to contend against in the way of its execution.

Although there is no reason to apprehend that obstacles would be encountered, which have not been successfully overcome in similar works elsewhere, still it is greatly to be feared, that the large outlay required, would affect the probability of the necessary appropriation being made to carry it out.

Under such circumstances, and keeping in view the fact of the great number of headlands, reefs and shoals calling for so many lights, both along the seaboard and inland navigation, proportionately increase the expense of an establishment, from which no direct revenue is derived. The propriety of such an expenditure, on one structure, might be fairly questioned, especially as it is not in all cases essential to the safety of vessels, that a light commanding a visible horizon of from 20 to 24 miles, should be placed on the extreme point of danger.

Considering the subject under this view, both on the spot and subsequently, it is believed that the object can be effected at much less expense, although, it must be admitted, in some respects in a less efficient manner, by placing a light on one of the "Cormorant Rocks," which lie about three miles to the North-west of the "South maker's ledge."

A number of these islets were examined, the first being the

S. E. Cormorant, which is 250 feet long by 70 feet average width, the highest part of it stands about 6 feet over the water, is 35 feet diameter, and nearly level. At other places the surface is very irregular.

The *Nest Rock* lies about a thousand feet N. W. from the S. E. Cormorant. It is about 150 feet long, by 100 feet wide, and stands 20 feet over the water, at the S. E. end; and 14 feet at the N. W. end.

It is believed a light tower could be erected on this islet, at less expense than on any other equally advantageous site, that could be selected, on this part of the coast. It is however, nearly 3 miles N. W. of the South-maker's ledge, and lies about $\frac{1}{2}$ of a mile to the north of it. Although a light there would not mark out the ledge, with an equal degree of certainty, as if directly over it, still it would point out, with greater precision, the no less dangerous "Whittle Rocks," lying fully five miles to the westward.

I am therefore of opinion that the "Nest Rock" should be selected as the site for a light house in that vicinity, unless a subsequent examination, when about to proceed with the work, should indicate a more favorable position.

The Tower should be at least 90 feet in height, so as to command an extensive range, and the lower part of it must be formed of heavy materials, well connected together, to resist the impetus of the sea, to which it will be subject in case of storms.

The small area of the "Rock" will prevent the necessary buildings for the keepers' accommodation being erected on it, these, together with the principal store house, can be advantageously placed on the outer Wapitagan Island, which lies to the northward, about $1\frac{1}{2}$ miles, inside of which is a good harbor with an entrance at its Eastern and Western ends.

This Island, as well as all others visited on this part of the coast, is of granite.

Sand, it is said, can be obtained of Coacocho Bay, about 7 miles to the westward of Cape Whittle.

A few fresh water ponds were seen on the Island above referred to, some of these it would be necessary to enlarge, as the nearest rivers are a considerable distance inland.

NATASHQUIN POINT.

This cape lies 63 miles westerly from Cape Whittle, 57 miles north of the east point of Anticosti, and is the extreme southern point of land on this part of the coast of Labrador. It is low, and scarcely perceptible at a moderate distance, except from its being at the termination of a range of high sandy cliffs, that extend along the shore for upwards of 13 miles to the eastward.

From the point westwards to Natashquin River, a distance of about $8\frac{1}{2}$ miles, the sand along the shore has been drifted into mounds and ridges, of from 20 to 85 feet in height, at distances varying from 200 to 350 feet back from the water. To the north of these, the surface of the ground is much lower, and covered with spruce trees, some of which are of good size.

The place selected for the site of a light tower, is on the S. E. end and most seaward part of the Point, a short distance to the eastward of a small fresh water stream, and 800 feet back from, and 25 feet over the sea, on a deep deposit of sand.

There is no stone in the vicinity; abundance may, however, be procured a few miles in the interior and within a distance of 15 or 20 miles on either side along the coast.

A light here would be 54 miles from the easternmost of the Mingan Islands, and, it is believed, would be highly useful as a guide to vessels, both by day and night.

CAPE OBSERVATION,

On the north side of the Island of Anticosti, was also examined, and estimated to be nearly 500 feet high. It is a limestone formation, closely wooded on top, and the coast, for a great distance on both sides, is high, and so remarkable that it appears as if a light there, would be of less utility, than at any other place visited.

I am fully of opinion that a light on one of the most seaward of the Mingan Islands, would be of far greater benefit to the navigation, than on any point that could be selected at or in the vicinity of Cape Observation.

NORTH POINT.

This Point is at the narrowest part of the north passage, between the Island of Anticosti and the coast of Labrador, and lies directly south of the most western of the Mingan Islands.

It stands barely 14 feet over the level of the sea, and is so little remarkable as to be distinguished only by the change which takes place in the direction of the coast.

The Point is a limestone formation, covered, to a depth of 4 or 5 feet, with shingle, and wooded with trees of moderate growth.

The place fixed upon as the site for a light house here, is near the extreme point and about 160 feet S. W. of water mark. Fresh water, timber for fuel and ordinary purposes, can be had on the spot, and limestone, of a good quality, is abundant at about 2 miles to the southward.

A light on this point would be 43 miles from the eastern end, and $14\frac{1}{2}$ miles from the western end of the Mingan Islands, and would be of great advantage to vessels, by enabling them to steer clear of the reefs, which extend out fully a mile from the shore, along the whole distance between the north and west points of the Island.

CAPE CHATTE.

This point is on the south side of the River St. Lawrence, about $97\frac{1}{2}$ miles westerly of the west end of the Island of Anticosti, and $27\frac{1}{2}$ miles in a south easterly course from the light house at Point des Monts. The coast in the neighbourhood of it, is described by Admiral Bayfield as destitute of harbours, but free from dangers, and that "when seen from the eastward or westward, so that it appears as the extreme, can easily be distinguished as being a round hill separated from, but of less height than the land behind it."

The most northern point of it is nearly 250 feet over the sea, the top is of small area, and the east and west sides have a declivity of about one in three, for a considerable distance downwards, and the whole is (with the exception of the north face of the cliff, which is

and precipitous, wooded with spruce trees of large dimensions, between which is a thick growth of underbrush, closely matted together.

This point is believed to be the most advantageous position for a Light House, of any which can be selected in that vicinity as it cannot be obscured in any seaward direction. The rock of which it is composed appears as if stratified, and resembles, in color and texture, the Cap Rouge stone, used for some of the best buildings in Quebec.

The place is difficult of access on all sides, but from a small bay on the west side, a road can be formed $\frac{1}{2}$ of a mile long at a moderate expense, by following a winding course in a south easterly direction for about one-half the height, thence bearing towards the proposed site of the buildings.

A small stream of fresh water was observed in a ravine, at about $\frac{1}{2}$ of a mile from the point. Salt can be obtained at Chatte River, or St Annes Bay, respectively 3 and 10 miles to the eastward.

A Tower here of 25 or 30 feet in height, fitted up with a "second order" Lens Light, it is believed, would add greatly to the safety of the navigation.

MANICOUAGAN SHOAL.

The dangers of this shoal are so well known, through the descriptive charts of the River St. Lawrence, and the sailing directions which accompany them, that it is only deemed necessary to state, that adjoining the Peninsula of Manicouagan, for a distance of fully 13 miles, in a direction all but parallel with the river, the shore is bordered with this shoal, out to the distance of 2 $\frac{1}{2}$ miles.

It always has been and justly continues to be a great dread to those in charge of sailing vessels, and has given rise to many exaggerated accounts of its dangers, in reference to which Admiral Bayfield remarks:

"There is often a very heavy sea, particularly in a weather tide, off this shoal but all the terrific accounts which have been circulated, of strong and irregular eddies in which vessels will not answer their helms, during a fresh gale of wind and can with difficulty be kept from running into the bank or driving against each other, are entirely unfounded, but without exaggeration, a shoal which extends out so far from a low part of the coast, which is difficult to make out at night, and which has such deep water close to it, must be sufficiently dangerous to demand the utmost prudence of the seaman, without alarming him with imaginary perils."

A person who resides on the Peninsula informed us, that, within the three years prior to 1857, he had known 20 vessels to ground on this shoal, the greater number in clear weather; but all of them had got off safely, except one, which became a total wreck.

On considering the question of efficiently marking out the dangers, with which this shoal is beset, the formidable and subtle elements of wind and sea, to be contended with in effecting it, many difficulties present themselves.

The first idea which naturally occurs, is that of mooring a Light Ship on the most seaward part of the outer edge of it, but the question at once arises could a vessel remain at its moorings in such a position during a strong gale? All the naval gentlemen with whom I have conversed on this subject, gave it as their opinion, that it could not "weather" the first storm, and that the only place where a vessel could be moored safely in that vicinity, is near the mouth of Manicouagan river, about 3 miles to the eastward of the Peninsula, and 5 miles off the extreme point of the shoal.

This being the case, it is obvious that a light, so remote from the point of danger, could not, under any circumstances be of much service to vessels; while there is reason to fear that on many occasions, it would be found a positive injury.

Another mode of effecting the object (which has been found successful in particular cases elsewhere) suggests itself, in the use of an iron structure, connected with a "screw foundation," placed on the outer edge of the shoal which, by presenting little impediment to the action of the waves or currents might be considered suitable to such a locality. But this plan is at once met by the difficulties arising from floating ice, which, there is every reason to believe, would seriously endanger, if not prove entirely fatal to that class of structure.

Hence, as a "dernier resort," it is proposed to erect a Light Tower on the extreme point of the Peninsula, which is opposite the most seaward point of the shoal, and distant $2\frac{1}{2}$ miles from its outer edge.

On considering the subject fully, in connection with the many known difficulties with which it is surrounded, I am of opinion that the important objects contemplated, would be attained with greater advantage, by a suitable light on the point, than in any other way that circumstances admit of adopting. Although the shoal would not be as effectually marked out, as if the light was directly over it, still, it is believed a light at the place stated, would be decidedly preferable to a floating one, in any position where it could be successfully moored, and besides, (all other circumstances being assumed as equal) a light from a fixed tower, is not only superior, but may be regarded as absolutely safe and certain in its exhibition : whereas, the rolling and pitching of Light Ships, frequently deranges the lights, and their liability to drag anchor or break adrift, is notorious to the great risk of vessels depending upon them, as a guide past any hidden danger.

It is therefore respectfully recommended, that a Light Tower, 80 feet in height, be constructed on Manicouagan Point, and fitted up with a revolving light of the "second order," with such a distinguishing characteristic as, at the distance of over 7 miles, it will shew to the observer as a white light 2 minutes, and appear dark one minute, or any other definite proportions of time ; but within the distance of 7 miles, the light will begin to shew dark red and white alternately, the red increasing in brilliancy, the nearer it is approached.

The locality can supply an abundance of sand, fresh water, and timber for all ordinary purposes.

Granite of a superior class can be obtained at a distance of between 5 and 6 miles, in what is called English Bay, at the mouth of the Manicouagan River.

METIS.

Several places were examined in this vicinity, with a view of ascertaining the most eligible position for a Light House, in the event of one being constructed here.

These were principally to the eastward, and northward, of Metis Point, on ledges of rocks standing from 4 to 6 feet over ordinary spring tides, but washed by the sea in case of storms.

A place was, however, ultimately selected on the highest and most seaward part of the point, lying between Little Metis and Grand Metis Bay, and possessing the advantage of being 60 feet over the level of the sea, and although not so far to the northwards as the reefs lying outside of the Bay, it would, in addition to its superior height, be in a position that cannot be obscured, in any direction serviceable to vessels. A light 50 feet in height at this place, would command a greater range than one 100 feet high would do, on the reef to the eastward.

The point is of a granitic character, and wooded on top sand can be obtained in either of the Bays to the eastward or westward of it.

A careful examination was also made of several points and islands on which small but important Lights are required, between the place last named and Quebec. But they are generally so well known, it is deemed unnecessary to say more than refer to them in the schedule under head of "Order of Construction."

2nd. Order of Construction, &c., &c.

To make suitable provision for the safety of the mariner, and seafaring traveller, by lighting up such headlands, and marking out such reefs and shoals—as likely to warn them of danger, and serve as a means of verifying their course,—may be justly regarded as one of the most urgent of social duties.

But important although this be on our coasts, bordered as they are by precipitous and ragged rocks, sunken reefs, irregular currents, and exposed to all the fogs and tempests of a rigorous climate, their vast extent, and the comparative infancy of our commerce, scarcely warrants the hope that more can be done for many years, than, from time to time, to mark out some of the most dangerous points which lie directly in the line of trade.

Still, when doing this, it is of the utmost importance that some definite system should be adopted, not only in the characteristic distinction of the Lights, that may at present be established, but with a view to the future erection of others between them, when situated over 80 or 100 miles.

It should also be kept in view that it is the interest of the Province, to aid and facilitate the navigation of both outlets from the St. Lawrence to the Ocean.

For although Steamships generally pass through the Straits of Belle-Isle, and between Labrador and the Island of Anticosti, the greater number of sailing vessels use the channel lying South West of both Anticosti and Newfoundland.

Keeping these objects in view, the order of importance of the respective Lights recommended, is believed to be as follows :

1st.	Superior Class.	" Bird Rocks," Gulf of St. Lawrence.
	Inferior do.	Cape Whittle, Cormorant Rocks, Labrador Coast of Gulf. Brandy Pots' Island, River St. Lawrence.
2nd.	Superior Class.	Long Pilgrims Do., Do. Do. Cape Ray, or Point Enragée, S. W. point of Newfoundland.
	Inferior do.	Maniconagan Point, River St. Lawrence. Great Island of Kamouraska. Bellechasse and Crane Islands.
3rd.	Superior Class.	Point Ferrolle, Western entrance of Straits of Belle-Isle, Newfoundland side.
	Inferior do.	North point of the Island of Anticosti.
4th.	Superior Class.	Point St. Laurent. North-east end of Belle-Isle, Eastern Entrance of Strait.
		Cape Chatte, River St. Lawrence. Cape Norman, Strait of Belle-Isle.
5th.	Superior Class.	Natashquin Point, coast of Labrador, nearly midway between Cape Whittle and Mingan Islands.
		Mecattina (Flat Island), about half-way between Western entrance of Strait and Cape Whittle.

3rd. Class of Materials, &c., &c.

The position in which light house towers generally are placed, and the small area of their bases compared with their height, lays them in a marked degree open to the influence of causes that lead to the destruction of artificial works, and therefore require, in their construction, a class of work peculiar to themselves.

Placed in situations subject to all the fury of hurricanes, the searching effects of rain storms, the constant moist atmosphere of the sea, and, in some cases, the action and shock of the waves, it is nowise surprising that, in the interior of structures thus exposed, should be found a damp humid air, especially where they have been erected subject to little or no other precautionary measures, than obtain in ordinary buildings in comparatively sheltered localities.

Cheapness of construction, however important in works generally, when allowed to trench on adaptation and permanency, in case of towers for leading sea lights at remote stations, on which life and property so much depend, may justly be considered as the reverse of economical. For although expediency, both in design and the class of materials used, must, in all cases, have its due weight, it is nevertheless notorious, that light-houses, built of inferior materials and workmanship, not unfrequently require an annual outlay to maintain them in a doubtful state of repair, that in the course of a few years amounts to full as much as would have made strong and durable structures in the first instances.

Three different classes of materials have been used for light house construction in this country, namely, wood, brick, and stone. In the United States and elsewhere, iron wrought and cast, has of late years been used in some cases for a like purpose.

Timber, as a principal material for light towers has, however, been confined to such places on our inland lines of navigation as are easy of access, and otherwise of less importance. They seldom stand longer than from 10 to 12 years without the lower part of them being renewed and the buildings otherwise repaired.

But the structures on the Island of St. Paul, in the Gulf of St. Lawrence, (previously referred to) seem to lead to the conclusion that timber is more durable within the influence of a sea atmosphere, although, for anything known to the contrary, they may have been renovated to a like extent.

In situations where lights are really necessary to the safety of the navigation, wooden erections on which to place them are very objectionable, not only from their liability to decay, but from their inflammable nature leaving them open to casualties which the utmost care and vigilance of keepers may be unable to guard against, while their destruction involves not only the loss of the lighting apparatus, but were it to occur during the season of navigation, the sudden extinction of the light might prove fatal to vessels depending on it.

It is therefore believed that wood should not be used as a principal material in important structures of this kind.

The cases in which brick have been used, are those of the light houses recently erected in the Strait of Belle-Isle, on the west point of Anticosti, and Cape Rozier, where the exteriors of the building were faced with two tiers of the best class of English fire-brick, laid in cement mortar, with a view of preventing moisture percolating through the masonry or stone,—of which the interior part of the walls are composed,—as well as to save the expense of cutting stone, the risk of transporting them from a distance, and landing them on a bare unsheltered beach, on which a heavy rolling sea is constantly beating.

This mode of construction has not, however, been found sufficient to resist the penetrating effects of the rain storms, which beat with such force against these exposed constructions;—but whether resulting from the class of cement used, or the mixing of it with salt water sand, or from any other cause, I have no means of judging.

But, assuming the whole to be a good class of materials of their respective kinds, and that the work throughout the interior of the walls was generally well executed,—as the outer and inner faces of them appeared to be at the time of my visit in 1857,—the result leads to the conclusion that a similar plan of construction should not be adapted for works situated in equally exposed positions, in a like rigorous climate.

Brick, it is believed, may, in certain situations, be used advantageously for light-houses, but it is doubtful if the Gulf of the St. Lawrence comes under that head. A great objection to their use as an exterior facing, is the multiplicity of joints, some of which, even with the greatest possible care, may, in course of building, be left more or less open; moreover, bricks of the usual shape do not correspond with the circular form generally, and with good reason given to light towers.

It is not, however, intended by this to object to the use of bricks for the interior of such structures, on the contrary, it is believed they may be extensively employed for that purpose. But there are no situations for which brick can be recommended for exterior work, where stone of a good quality could not be used advantageously, both as regards strength and durability.

The best and most satisfactory class of ordinary light houses, as respects the interior when exposed to a marine atmosphere, in my opinion are those which have been constructed under the Light House Department of France. They are built in the most substantial manner possible compatible with economy, the inside being lined with brick, between which and the interior of the wall, is left a space to allow a free circulation of air, thus securing the buildings from dampness.

This mode of construction appears to me as the best adapted to remote stations on the Lower St. Lawrence, wherever a good class of building stone can be obtained in the vicinity. The existence or otherwise of which can only be ascertained with great care time, and an experienced acquaintance with materials of that nature.

The good qualities of building stone for such works, lie principally in their ability to resist humidity and frost, and not being liable to splinter or fracture readily. These requisites can only be found in stone of a fine uniform grain and compact texture. Weight is of greater importance than hardness. Subject to these conditions, the stone most easily and readily dressed should have the preference.

From what has been said in reference to the different places where light stations are proposed, it will be seen the choice of building materials are confined to lime stones and granite. (The latter Sir William Logan informs me should be termed "Gneiss.")

Limestone for the most part, although considered durable building stones, are liable to "draw damp," or allow moisture to pass through them, but, when sound, free from seams and of good quality, its use would be less objectionable on adopting and carrying out the plan above recommended,—provided stone better capable of resisting the action of the atmosphere were used for the pedestal under the lanterns.

Granite, or "Gneiss," would be difficult and expensive to dress, but its durability would almost "bid defiance to time itself."

After fully considering the subject, I am of opinion that wherever the rock on the spot is of a nature that admits of its being used for building purposes, even if the expense of preparing it should be triple the cost of what stone could be furnished for in a settled part of the country, still, its use would ultimately be found the most economical, as the delays and disappointments inseparably connected with the delivery of heavy and bulky materials at places so remote and exposed, would, no doubt, far exceed everything that could be calculated upon or even tolerated as a probable estimate of such expenses.

It is therefore recommended that in all cases where light towers are to be erected, at places difficult of access and remote from settlements, that the stone of the locality be fully tested, and if of a suitable class, adopted for their construction and prepared on the spot, granite or "Gneiss" not excepted.

In regard to iron as a principal material for light towers, it may be said that there are peculiar situations in which it, no doubt, is preferable to any other: such as on a reef, or shoal of sand, or gravel, or where a class of foundation other than that of screw piles, could not be formed short of an outlay that might, in some cases, prevent the improvement being undertaken.

The comparatively small expense of a foundation of screw piles, and the little obstruction it presents to the action of the sea, makes it well adapted to situations where a solid structure, even if it could be formed, would be liable to be undermined.

Cases of this kind, and positions so remote from suitable building materials, that the cost of transportation together with the uncertainties of landing them, would be found serious objections to their use (such as the "Bird Rocks" in the Gulf) form in my opinion exceptions in favor of iron.

But, for ordinary purposes, iron towers are considered objectionable, from their stability in all cases depending mainly on the strength of the materials and security of the fastenings which maintain them in place, and further, when of great height, they are necessarily formed of many parts and joints which, however well and strongly connected at first, must, in course of time, become loosened from the vibration caused by the force of the winds and storms.

Moreover, the effects of salt, rain and water on iron, are not sufficiently known to admit of a reliable calculation being made of its durability, and, of the various methods that have been proposed and tried for its protection, we have little more than the testimony of patentees or of persons experimenting under their influence.

Keeping these facts in view, I beg respectfully to recommend the adoption of such a class of materials for the towers of all essential sea lights, as can be relied on for durability, and will only add that *weight* and *mass* has been preferred to *strength* as a source of stability, in the greater number of the best constructed light houses extant.

Before closing this Report, it is deemed proper to refer briefly to the improvements that have taken place in the mode of illumination, as it forms one of the most important elements of light house economy.

In 1759, the famous Eddystone light house, on the coast of Cornwall, was lighted with tallow candles, which were exchanged, in 1807, for Argand lamps and parabolic reflectors of plated copper; these were replaced in 1822 with the dioptric apparatus of Fresnel.

The "Tour de Corduan," on the coast of France, in 1780 was for the first time lighted with lamps and parabolic reflectors, and in 1822 the lenses of Fresnel were introduced, and gave it the high character which it deservedly bears. Since that time lens lights have been brought into use in all important lights on the coast of France.

The first dioptric light used by the Northern Light House Board of Scotland was established in 1835 on Inch Keith, in the Frith of Forth. In 1851, there were very few if any of the ordinary cotoptric lights in use on those coasts.

The second lens light used in England, is said to have been established in 1837 on Star Point in Devonshire; in 1851, the Trinity House had 24 first and second order lights, besides a number of smaller lenses, and others have been and are continuing to be introduced.

In 1851 there were three lens lights in the United States, and in 1856 the number had increased to 310. At present no other description of light than lenses are adopted for new stations, or for the renovation of those already established.

In this Province (or at least belonging to the Government) there are ten lens lights, that is 2 first and 2 second order lenses on the lower St. Lawrence. And on Lake Huron and the Georgian Bay, there are 4 second, 1 third and 1 fourth order lenses.

Besides these, there are provided, but not in use, 3 second and 2 third order lanterns and lighting apparatus.

These statements are submitted with a view of shewing the importance attributed in this, as well as other countries to an efficient means of light-house illumination.

The lens apparatus is principally constructed of triangular shaped prisms and heavy plates of the best and most transparent glass, made, shaped and arranged on purely scientific principles, and placed in frames around a centre lamp of from two to four concentric burners, every ray of which is thrown into an intense beam of light of great brilliancy, visible, in some cases, at distances of fully 30 miles.

The lights are classed from the 1st to the 6th orders, and the apparatus for either may be obtained on the dioptric or catadioptric principle, that is to say, the lenses may be formed wholly of glass, or metal may be combined with glass as an optical agent.

The lenses when once placed cannot be disarranged unless wilfully, and although some mechanical skill and training are necessary for keepers of lights of the higher orders, still that is confined, in a great measure, to the management of the mechanical lamps, which, in the lower orders of lights, are so simple as to be readily understood by any one.

The United States Light House Board estimates the difference between the expense of a fourth order lens light, and one fitted with the usual number of reflectors and lamps for one year, at about sufficient to pay the first cost of the lens. This large saving is independent of the superiority of the lens apparatus in durability, and producing a more brilliant light.

With lenses of the fifth and sixth orders, the difference is still more favorable.

In lenses of the third order, which are superior in efficiency to the best reflector lights in this Province, they estimate the saving at not less than $3\frac{1}{2}$ to 1,—a third order lens light in use every night throughout the year consuming only 183 gallons of sperm oil.

Being convinced of the superiority and economy of the Fresnel lens over that of the metallic reflectors, I submit that in all cases it be used in new light houses, and also introduced when extensive repairs are required to any of the old structures.

The light houses on the coasts of France and England are, with few exceptions, illuminated by means of colza or rape seed oil. In the United States and this Province, sperm oil is for the most part used for that purpose.

But the constantly increasing demand for the latter, and the annual diminution of the supply seems to require that efforts should be made to find a substitute for it. The best authorities, however, give it as their opinion that the colza is the only vegetable oil which can be advantageously used in light houses, and it is, in many respects, superior to sperm oil. A larger quantity of it is, however, required to produce a like effect, but the cost is a little more than one-half.

The colza oils are principally obtained in France and Holland, and rapeseed oil in Russia.

Having thus hurriedly touched upon all the questions referred to in your letter of instructions, except that of cost, which no doubt forms one of the principal considerations, still it will be obvious from what has been already stated, and the very limited time at my disposal, that any opinion given on this matter, can be little more than mere conjecture.

The works to which special attention has been directed are, however, estimated as follows :

Light Tower, Cape Whittle, <i>Cormorant Rocks</i> , with Store House Keeper's Dwelling, &c. &c. &c., on Wapitagan Island	\$120,000
" " Bird Rocks, with Keeper's Dwelling, Store House, Water Tanks, &c. &c. &c.	\$70,000

All of which is respectfully submitted.

I have the honor to be, Sir, your obedient servant,

JOHN PAGE.
Chief Engineer Public Works.

STATEMENT of the Fines and Damages imposed and collected in 1859, on the Beauharnois, Laebine and Chambly Canals.
 BEAUHARNOIS CANAL.

AMOUNT of Fines and Damages collected by order of the Superintendent of the Beauharnois Canal, for the year 1859.

Dates.	Vessels' Names.	Master or Owner.	Amount.		Remarks.
			\$	cts.	
1858.....	Schooner C. Reeves.....	Of Detroit.....	50	00	To damage to Bridge Lock No. 9.
	Steamer New Era.....	Chrysler, Captain.....	2	50	" do to Ferry Scow No. 2
1859.					
May 23.....	Schooner British Queen.....	Thomas Wade, owner.....	2	00	" do to Bumping Post Lock No. 13.
" 28.....	Barge North Star.....	Masson, do.....	4	00	" do to Bridge do No. 13.
" 30.....	Schooner Charles Walker.....	Winstow, do.....	2	93	" do to Bridge do No. 10.
June 10.....	Steamer Welland.....	Renaud, do.....	6	00	" Breaking Crab do No. 6.
July 1.....	Barque Allies.....	Fairwell, do.....	15	00	" damage to Copings do No. 9.
" 2.....	Barge St. Zolique.....	" do.....	2	00	" to Bridge over Waste Weir No. 10.
" 22.....	Steamer Banashee.....	Howard, Captain.....	2	46	" do to Foot Bridge Lock No. 8.
August 12.....	Barge St. Aimé.....	" do.....	3	46	" do do No. 6.
September 13.....	Barge Rosa.....	Jasmin, owner.....	5	92	" do to Gates do No. 13.
" 21.....	Steamer Tom Dickie.....	Davies, master.....	3	00	" do do do No. 10.
October 12.....	Barge Nelly Blight.....	G. Williams, owner.....	60	00	" do to Bridge over Lock No. 14.
" 15.....	Barge Deer.....	Deschamps, do.....	7	00	" Fine and damage to Gates Lock No. 13.
" 23.....	Barge Rosa.....	Jasmin, do.....	5	00	" Violation of Canal Regulations.
" 23.....	Barge North Star.....	Masson, do.....	5	00	" do do do.
" 27.....	Propeller Indian.....	Jacques, Hooker, & Co., do.....	20	00	" Neglecting to close fire screen on smoke stack, as required by regulations.
November 13.....	Berge Glen Shee.....	McLean, do.....	5	00	" Violation of Canal Regulations.
" 14.....	Propeller Indian.....	Jacques, Hooker, & Co., do.....	3	70	" Damage to Gates Lock No. 11.
" 26.....	Propeller Whitby.....	Jones & Black, do.....	400	00	" Breaking the Lower Gates No. 9.
			604	97	

Certified,

(Signed,)

PIERRE LAURENCEL,
 Superintendent.

J.
CHAMBLY CANAL.

AMOUNTS collected for damages done to Canal, by different vessels, during the season of navigation, 1859.

Date.	Name of Vessels.	Master or Owners.	Amount.		Remarks.
			\$	cts.	
May 25.....	Barge Charlotte.....	.....	2	00	Damage done to Bridge No. 7.
June 1.....	do British Queen.....	O'Sheldan, Captain.....	2	00	do fender of Lock No. 7.
" 8.....	do of Steamer Rose.....	McNaughton, do.....	6	00	do Bridge No. 4.
" 10.....	do Republic.....	W. Edwards, do.....	1	00	do Lock No. 6.
" 20.....	.....	John Finlay, do.....	1	00	do done by him to bank. of Canada.
July 13.....	Boat Lousia.....	Welch, do.....	0	75	do to Gate Lock No. 9.
" 29.....	Barge of Steamer Eric,.....	Alcrow, do.....	4	00	do to Bridges No. 4 and 7.
September 6.....	" Louisa.....	G. Rolland, do.....	4	00	do Lock No. 5.
" 26.....	" Zoé of Steamer Ida.....	Smith, do.....	4	00	do Bridge No. 7.
" 30.....	" Canada of Steamer Utica.....	Montgomery, do.....	8	00	do Bridge No. 5.
October 1.....	" Zoé of Steamer Ida.....	Smith, do.....	3	00	do Lock No. 6.
" 6.....	" Beckwith.....	Hunt, do.....	2	00	do Lock No. 8.
" 15.....	" Martha.....	Jones, do.....	3	00	do Bridge No. 6.
" ..	" Ada.....	Berrer, do.....	1	00	do Lock No. 5.
" 17.....	" Monika.....	Lalmand, do.....	2	00	do Lock No. 5.
" ..	" Canada.....	H. Naylor, do.....	15	00	do Bridge No. 2.
" 22.....	.....	John Findly, do.....	...	82	do Lock No. 7.
November 8.....	Barge Wave.....	Pichette, do.....	1	00	do Bridge No. 8.
" 11.....	Steamer Rose.....	McNaughten, do.....	4	00	do Defender to Lock No.
" ..	Barge St. Charles.....	O'Claire, do.....	5	00	do Bridge No. 6.
" 14.....	" Sophie.....	Jacquos, do.....	3	50	do fender Lock No. 7.
" 26.....	" St. Marcel.....	Basqmien, do.....	2	00	do Bridge No. 7.
" 22.....	" Consolation.....	J. Chatel, do.....	6	00	do Bridge No. 1.
" 25.....	" Rainbow.....	Lahue, do.....	2	00	do Bridge No. 6.
October 25.....	" Marguerite.....	G. Rolland, do.....	7	00	do Lock No. 5.
			90	07	
			\$		

(Signed)

P, T. CHARTIER,
Superintendent. C. C.

LACHINE CANAL.

AMOUNT of Fines and Damages collected by order of the Superintendent of the Lachine Canal for the year 1860.

Date.	Name of Vessels.	Master or Owner.	Amount.		Remarks.
June 4.....	One crib square timber	Mr. Dickson.....	4	00	Abandoned in channel, and obstructing navigation.
" 17.....	Schooner Queen of the Bay.....	Campbell.....	5	00	Damage to stone pillar of Wellington Bridge.
" 21.....	Crib flat timber	Taylor.....	4	00	Abandoned in channel and obstructing navigation.
July 14.....	Saw logs	Lager.....	4	00	do do
" 15.....	Barge F. the Balla.....	Evans Brothers.....	1	00	Taking forcible possession of gates and lock of Lachine.
" 16.....	Steamer Boston.....	Meagher.....	14	00	Damage of masonry of pillar at Lachine Bridge.
" 26.....	Schooner Alida.....	Basset.....	5	00	Breaking bridge lamp Côte St. Paul.
August 15.....	.....	J. St. Denis.....	20	00	Violating Canal Regulations.
" 25.....	Crib lumber.....	T. McGrath.....	4	00	Abandoned in channel and obstructing navigation
" 25.....	Crib round timber.....	C. Cavignon.....	4	00	Do do
" 31.....	" square timber.....	C. Deschamps.....	4	00	Do do
September 22.....	Schooner Eclipse	Calvin & Co.....	5	00	Breaking bridge lamps Brewster Bridge.
" 23.....	Schooner Caroline.....	Bissel	75	00	Damage to lower gates, Lock No. 1.
" 24.....	Scow Sophie	Rebeau	20	00	Damage to Brewster's Bridge.
" 30.....	Schooner Empress Eugenie.....	Dubbee.....	...	50	Damage to gas lamp at Bridge, Lock No. 2.
October 15.....	Barge Rapid.....	sold for.....	15	30	
" 30.....	Crib of timber.....	McDonald	4	00	Abandoned in channel and obstructing navigation.
November 9.....	Steamer Amity.....	McKellar.....	12	00	Damage to wing wall above Lachine Bridge.
" 18.....	Schooner J. G. Desbler.....	Gale.....	12	00	Damage to stone pillar at Lachine Bridge.
" 21.....	Barge Herbert	Blardeau.....	5	00	Casting anchor at entrance of Lock No. 4.
" 30.....	Crib timber	C. Deschamps	4	00	Abandoned in channel and obstructing navigation.
" 30.....	Crib square timber.....	Dickson	4	00	Do do
" 30.....	Drifting timber	McGauvern	4	00	Do do
Total amount.....			229	80	

(Signed,)

ALEXANDER BISSETT,
Superintendent.

STATEMENT of Hydraulic Rents and leases on the St. Lawrence and Chamblé Canals.
WILLIAMSBURG CANAL.

DESCRIPTION OF MACHINERY.	NAME OF LESSEE.	RUN OF STONES.	AMOUNT PER ANNUM.	
Grist and Flouring.....	Benjamin Chaffy,	8	\$224	00
Grist, Flouring, and Carding,	William Elliott,	3	140	00
Grist and Flouring.....	John Molson, Junr.	4	120	00
Starch, Grist, &c.,.....	Benson Aspden, (12 runs,) pay for.	4	160	00
Grist.....	C. C. Farren, (4 runs,)		"	00
	William McLaughlin,	Wharf.	12	00
	John Walsh,	"	44	00
	K. McPherson,	"	12	00

CORNWALL CANAL.

DESCRIPTION OF MACHINERY.	NAME OF LESSEE.	RUN OF STONES.	AMOUNT PER ANNUM.	
Grist and Flouring.....	Andrew Elliott,	8	\$240	00
do	John Harvey, (Hitchcock)	4	120	00
Saw,.....	A. E. Cadwell,	Saw.	120	00
	Hon. P. Vankoughnet, (Wm. Mattice,)	20	600	00
Grist,	Benjamin G. French,	8		
	John Bell, .....(Water pipe to Brewery)		10	00

STATEMENT of Hydraulic and other Property leased on the line of the Lachine Canal,—showing the names of the Lessees, date of Lease description of Mill, amount of Water Power, and yearly Rent.

Where Situated.	Names of Lessees.	Date of Lease.	Description of Mills.	Amount of Power.	Yearly Rent.
Lot No. 1, Basin No. 2...	Frothingham & Workman.....	1st June, 1855.....	Store House.....	None.....	\$ 392 00
E; No. 2, do. No. 2...	Frothingham & Workman.....	1st June, 1855.....	Coal Yard.....	".....	264 00
W; No. 2, & Lots 3 & 4.	Bartley & Gilbert.....	.....	Iron Foundry, and Steam Boiler Works, Machine Shop.....	8 Run of Stone.....	} 1290 00
Lots 5, 6, & 7.....	Bartley & Gilbert.....	.....	Store and Elevator.....	12 do.	
Do. No. 8.....	James Harvey.....	23rd Novr., 1846....	Store and Elevator.....	4 do.	430 00
East; No. 9.....	James Harvey.....	1st Jan'y., 1851....	Wood and Lumber Yard.....	None.....	110 00
West; No. 9.....	Thomas Peck.....	1st April, 1851.....	Rolling Mill and Nail Factory.....	".....	110 00
Lot No. 11.....	Thomas Peck.....	23rd Novr., 1846....	Flouring Mills.....	4 Run of Stone.....	430 00
" " 11.....	James McDougal.....	23rd Novr., 1846....	do.	4 do.	430 00
" " 12 & 13.....	Ira Gould.....	28th May, 1857.....	do.	8 do.	864 00
" " 14.....	Ira Gould.....	27th May, 1857.....	do.	4 do.	432 00
" " 15.....	T. D. Bigelow & wife.....	1st Jan'y., 1851....	Nail Factory.....	4 do.	430 00
" " 16.....	Hallam & Dunn.....	1st Jan'y., 1851.....	Rolling Mill.....	4 do.	430 00
" " 17.....	Wm. Lyman & Co.....	1st Jan'y., 1851.....	Oil Mills.....	4 do.	430 00
" " 18 & 19.....	Grant, Hall & Co.....	1st Jan'y., 1851.....	Flouring Mills and Stone.....	8 do.	860 00
Dry Dock and Water } Power.....	Geo. & Wm. Tate.....	1st Jan'y., 1851.....	Foundry, Nail Factory, and Saw Mill.....	4 do.	1000 00
St. Gabriel Lock.....	John Young & Ira Gould.....	1st March, 1851....	Entire Surplus, Water & Hydraulic Lot.....	80 do. sublet.	1680 00
Côte St. Paul Lock.....	Wm. Parkyn.....	1st Feb., 1853.....	Entire surplus water.....	do.	1601 00
Island above lock No. 3...	Augustus L'Albé.....	1st Jan'y., 1851....	Ship yard.....	None.....	100 00
Basin No. 1.....	Hamilton & Gildersleeve.....	1st May, 1859.....	Freight shed.....	Do.	75 00
Basin No. 1.....	M. K. Dickinson.....	1st May, 1859.....	Freight shed.....	Do.	60 00
At Grand Trunk Crossing	Morley & Lewis.....	1st Oct., 1859.....	Supply of water for tannery.....	3 inch pipe.....	10 00
Côte St. Paul.....	Patrick Evers.....	1st Jan'y., 1853....	Farm.....	None.....	40 00
Land, &c., between old } & new Canal at Lachine }	Duncan Grant.....	13th Oct., 1853....	Ship yard.....	None.....	80 00
Total.....				.....	000 00
Yearly Rental.....				.....	11548 00

K.

BEAUHARNOIS CANAL.

STATEMENT of Hydraulic and other Property Leased on the Beauharnois Canal, shewing the Names of Lessees, Date and Term of Lease, Annual Rental, and amount of Rents accrued, &c.

Names of Lessees.	Property leased, &c.	LEASE.		Annual Rent.	TOTAL RENT ACCRUED.		Total Amount Paid.	Amount due to dates.	Paid in 1859.	REMARKS.
		Date.	Term.		Amount.	Dates.				
D. O. Pease	Wharf at St. Timothy	1st May, 1847	Pleasure of Dept.	\$ cts.	\$ cts.		\$ cts.	\$ cts.	\$ cts.	
Owen Lynch	do do	1st May, 1847	do	20 00	250 00	To 1st Nov., 1859.	220 00	30 00	.....
Wm. Kolden	do do do	1st May, 1848	do	20 00	250 00	do	100 00	150 00	.....
Louis Bergeron	Wharf at Big Basin	1st May, 1851	do	20 00	230 00	do	60 00	170 00	.....
Owen Lynch	do do do	1st May, 1851	do	20 00	160 00	do	50 00	110 00	.....	{ Rent \$10 for 1st
D. O. Pease	do do do	1st May, 1852	do	20 00	170 00	do	20 00	150 00	.....	{ year, & \$20 after
Julien Lavey	do do do	1st May, 1852	do	20 00	130 00	do	100 00	30 00	.....
Eldore Larueque	Wharf at Head Canal	1st May, 1859	do	20 00	50 00	do	20 00	30 00	.....	1st year paid in ad-
I. Ben. SE. Amour	do do do	1st May, 1859	do	20 00	20 00	To 1st May, 1860.	20 00	20 00	.....	vance.
Alex. Buntin (leased from F. F. Miller) ..	Hydraulic, lots Nos. 1, 2 & 3, East side, lower Dam.	1st Jan., 1856	21 years	354 00	1239 00	To 1st July, 1859.	835 00	354 00	.....
Alex. Buntin (leased from Wm. Miller) ..	Lot No 4, East side, lower Dam	1st Jan., 1854	do	318 00	1749 00	do	.....	1749 00	.....	{ Rent commenced
Stephen May	Lot No. 5	1st July, 1853	do	120 00	420 00	do	260 00	60 00	.....	{ 1st January, 1856.
F. X. Poiras	Lots 1 & 2, West side of Dam	1st Jan., 1856	do	210 00	840 00	do	.....	840 00	.....
Alex. Buntin	Ground for stone, North side of Canal, below Guard Lock	1st July, 1859	Pleasure of Dept	45 00	22 50	To 1st Jan., 1860.	.....	22 50	.....
					Total.....\$		1825 00	3715 50	20 00	

CHAMBLEY CANAL.

Chas. V. Piere	Wharf at St. John	11 Mar., 1851	18 years	113 00	966 50	To 1st Oct., 1859.	.....	.....	.....
William Coate	Small plot of ground adjoining his Cannery at St. John	30 Mar., 1859	Pleasure of Dept.	20 00	20 00	To 1st April, 1860	20 00	.....	20 00	Paid in advance.
					Total.....\$		.....	.....	20 00	

L.

EXTRACT FROM THE REPORT OF THE ENGINEER OF THE OTTAWA SURVEY.

To the HONORABLE JOHN ROSE,
Commissioner of Public Works.

I have the honor to submit herewith my Report upon the Ottawa Navigation, in accordance with instructions received from the Department of Public Works, and hereunto appended.

The questions upon which information is sought, and to answer which, the Survey has been carried on during the past year, are as follows:—

I. To determine the practicability of a navigation for vessels of the larger class, between Montreal and Lake Huron, by way of the River Ottawa, and its tributary, the Matawan, Lake Nipissingue, and French River.

II. To ascertain what scale is best suited to the nature of the route.

III. To give a reliable estimate of the cost of the improvement.

In the first place, I have to report, that the distance between Montreal and the mouth of French River, on Lake Huron, (according to the plans furnished me by the Department.) is, following the line of navigation adopted, 430.76 miles

That, of the distance, 351.81 miles are already a good natural navigation, and require no improvement, and that it is perfectly practicable so to improve the remaining 78.95 miles, as to convert the whole drain of waters into a first class navigation for steam vessels, and to reduce the length of canalling to 29.31 miles, or, exclusive of the Lachine Canal, to 20.82 miles.

Secondly, the scale of navigation attainable, and which I would recommend as best suited to the capabilities of this route, is calculated for vessels of one thousand tons burden, and has locks 250 feet long by 45 wide, by 12 feet depth on the mitre sills

Finally, a careful estimate, resulting from a close instrumental Survey of all obstructed points, the details of which will be found hereafter, enables me to state, that the cost of this improvement, exclusive of interest, legal expenses, and damages, none of which, I have any means of ascertaining, will not exceed the sum of \$12,026,351, distributed as follows:—

OTTAWA AND FRENCH RIVER NAVIGATION

	Distances.		Levels.		COST.
	Rivers and Lakes.	Canals.	No. of Locks.	Feet Lockage.	
Lachine Canal		8.50	5	43.75	[not estimated.]
Lake St. Louis.....	13.81				do. do
Saint Anne		1.19	1	1 00	489673
Lake of Two Mountains.....	24.70				
Cerdillon to Grenville	7.73	5.00	7	38.50	1649900
Green Shoals		0.10			136106
Ottawa River	55.97				
Chaudière and des Chênes	3.75	2.61	6	61.00	816733
Des Chênes Lake	26.69				
Chate	1.70		5	50.00	681932
Chate Lake	18.32				
Snows to Black Falls.....	24.93	1.05	11	104.00	1288846
River and Lake Comolongo.....	4.85	0.14	2	18.00	262414
Chapau and L'Islet	33.58				243507
Deep River.....	51.74	2.26	14	148.20	1755853
Joachim to Matawan.....	51.15	1.08	11	144.00	1162154
River Matawan.....	47.52	0.82	7	77.00	2160360
Summit level and cut.....					886117
French River					574175
Add Engineering and Superintendence.....					
	401.44	29.33	64	665.70	12057850

There are, exclusive of the Lachine Canal, 20.82 miles of Canals, costing \$12,057,680, which is equal to \$571,984 per mile of Canal. But the cost of the whole navigation from St. Annes to Lake Huron, 408.76 miles, is but a trifle under \$29,500 per mile.

COMPARISON OF ROUTES—CHICAGO TO MONTREAL, *via* ST. LAWRENCE AND OTTAWA.

Names.	Miles.					Number of Locks.	Lockage.	Current.	Total Rise and Fall.
	Open Navigation.			Canals.	Total.				
	Lake.	Inland.	Total.						
Lachine..... St. Lawrence and Wel- land	Via St. Lawrence.								
				8.5		5	43.75		
				60.5		49	490.00		
	1145	134	1279	69.0	1348.0	54	534.75	38.5	561.25
	Via Ottawa.								
Lachine..... Ottawa.....				8.05		5	43.75		
				20.52		64	665.70		
	675	401.74	976.74	29.02	1005.76	69	709.45	31.4	730.85

Such are the results of the Survey. The manner in which they have been attained, will be described under the following general heads :—

- I. Physical characteristics of the Ottawa.
- II. Method of improvement proposed.
- III. Character of work, and material in locks, dams, canals, &c.
- IV. Scale of Navigation.
- VI. General Remarks.

Ottawa, 4 January, 1869.

THOS. C. CLARKE,
Engineer, Ottawa Survey.

M.

CIRCULAR MAKING CERTAIN ENQUIRIES TOUCHING THE COURSE OF TRADE.

QUEBEC, 20th January, 1869.

SIR,—The Government of Canada has under its consideration the expediency of enlarging the Welland Canal, and I am desirous of obtaining certain information on the subject, before submitting the annual report of this Department to the Legislature. I therefore take the liberty of applying to you for the purpose of obtaining your views on the subject, and would respectfully solicit a communication of such facts in answer to the following queries, as your experience may enable you to give.

It is presumed that a large share of the trade of the Western Lakes, which formerly came through the Welland Canal, and was distributed from the various ports on Lake Ontario, is now directed to Buffalo and other ports of Lake Erie, and that one, if not the chief reason, is to be found in the fact that many of the vessels now employed are of too large a size to admit of their passing through the Welland Canal.

If you have the data within your reach, I should be glad to be favored with a statement on the following points:—

1st. At the time that the Welland Canal was completed in 1844, what was the number and average size of vessels engaged in that branch of the Trade, on Lakes Michigan, Huron, and Erie, connected with the movement of produce eastward, either viâ Buffalo or Lake Ontario?

2nd. What proportion of that Trade passed through the Welland Canal from the years 1844 downwards, distinguishing the several years?

3rd. What is the present estimated tonnage and average size of vessels engaged in the same trade? What proportion thereof passes through the Welland Canal?—and what proportion, from too great size, cannot pass?

4th. How the receipts of produce from the Upper Lakes at Oswego, Ogdensburg, or other American Ports on Lake Ontario, kept pace as regards progressive increase, with those of Buffalo? and can you supply any returns showing the difference?

5th. If not, whether do you attribute the falling off mainly to the inadequate size of the Welland Canal, or to the enlargement of the Erie Canal, and the additional Railway facilities afforded for transit from Lake Erie to the sea board, or have no facilities to an equal extent been created from ports on Lake Ontario?

6th. What proportion of the produce is carried in vessels too large to pass through the Welland Canal?

7th. Do you consider the Welland Railway calculated to attract the trade to the basin of Lake Ontario, or that the facilities it affords render less necessary the enlargement of the Welland Canal?

8th. Looking at the class of vessels now in use, and likely hereafter to be employed on Lakes Superior, Michigan, and Huron, in connection with the direct Atlantic Trade, to what size and depth would you consider the Canal should be increased?

I have the honor to be,

&c., &c.,

(Signed)

JOHN ROSE,
Commissioner.

The following Extract is from the Report of the British Consul, at Buffalo, to Her Majesty's Government,—accompanying which is an accurate summary of the tonnage of the Vessels on the Lakes and River St. Lawrence, obtained by him from the Chairman of the Board of Lake Underwriters.

[Copy.]

Extract from Mr. Donohoe's Trade Report, for the year 1858, forwarded to Her Majesty's Secretary of State for Foreign Affairs, the 18th of February, 1859.

"There is one question of the greatest importance to British interests on this Continent, viz: The carrying Trade of the West, which is a subject I cannot pass over without making some remarks, and affording the complete statistics that I have had it in my power to collect. When I speak of the West, I allude to the vast grain-producing region comprised in the states of Wisconsin, Michigan, Iowa, Indiana, Illinois, Ohio, Missouri and Kentucky, with the vast tract of country which stretches Westward to the Rocky Mountains, and which, though at present it produces but little, and is but partially populated, will one day be dotted over with the thriving farms of industrious husbandmen."

“ I have no reliable statistics before me, to point out the quantity of grain produced
 “ in the West, but I annex a table shewing the total exports of Wheat, Flour and Indian
 “ Corn, from the United States, for the year ending 30th June, 1857.

	WHEAT.		FLOUR.		CORN.	
To	Bushels.	Value in Doll's.	Barrels.	Value in Doll's.	Bushels.	Value in Doll's.
England	8560084	13435325	1027066	6905769	4184279	2927883
Scotland	1019529	1544787	121150	837149	164704	114684
Ireland	138863	232455	22272	154029	426223	298435
Total Gt. Brtn.	9718476	15212567	1170488	7896947	4775206	3341002
To other Coun-tries	4851855	7028290	2541565	17985369	2730112	1843664
Total Export.	14570331	22240837	3712053	25882316	7505318	5184666

“ This table will fully answer my purpose, as it not only shows the quantity that
 “ reaches Great Britain, but likewise the total export of grain from the United States.
 “ There are two great natural channels by which this vast extent of produce should reach
 “ the sea-coast for embarkation, viz :—

- 1st.—The Mississippi River, and
 2ndly.—The St. Lawrence Route.

“ It is to the latter that I should particularly wish to call attention, as that route
 “ passes through a British Colony, and it is of the utmost importance to Canada to secure
 “ as large a proportion as possible of this carrying trade. The quantity of grain exported
 “ from the United States to Canada during the year ended 30th of June 1857 was as
 “ follows :—

WHEAT.		FLOUR.		CORN.	
Bushels.	Value.	Barrels.	Value.	Bushels.	Value.
1655641	\$1867457	118857	\$717245	1161088	\$673900

“ Of which probably a large proportion was shipped to Great Britain ; though by the
 “ Trade Returns of 1857 laid before the Parliament of the Province, I see that the quan-
 “ tity of grain exported seawards by the St. Lawrence during the year ending the 31st
 “ December 1857 only amounted to 633,905 bushels of Wheat, and 265,848 barrels of
 “ Flour. It does not appear that any Indian Corn was exported, and, as the quantity
 “ entered for home consumption nearly tallies with the total export of that article from the
 “ United States to Canada, we may fairly presume that there is little or no exportation of
 “ Indian Corn from the Province, which I believe does not produce any, as the climate is
 “ unsuited to its growth.

“ I have no later statistics as to the export of Grain by the Mississippi River, than
 “ those contained in the Report of Her Majesty's Consul at New Orleans, for the year
 “ ending August 1856, by which I see that from that port, 692,000 bushels of
 “ Wheat, 99,862 barrels of Flour, and 2,935,000 bushels of Indian Corn, were shipped to
 “ Great Britain, with a total export of 1,554,000 bushels of Wheat, 729,500 barrels of
 “ Flour, and 4,190,000 bushels of Corn.

“ I should suppose that a much larger quantity was forwarded by that channel dur-
 “ ing 1857, and 1858, when the total quantity exported from the United States, was so
 “ much greater, I do not, however, place much value upon the competition of the Mississi-

"pi River, as far as the export Grain trade with Great Britain is concerned, in consequence of the geographical position of its mouth ; but with increased facilities for transit at the Isthmus, I have no doubt that the Trade with the Pacific Ports would be enormous.

"It is between Canada and the State of New York, that the struggle for the carrying trade of the Western Country will be fought, and if Canada does not display the greatest possible activity, she will have to succumb to her Southern rival. It is the competition of the Erie Canal from Buffalo, to Albany, on the Hudson River, and the branch of the same Canal, from the Port of Oswego, on Lake Ontario, which most directly enter into opposition with British interests in the carrying trade. The Legislature of the State of New York,—fully alive to the importance of directing the largest possible share of this trade through the State, have from time to time, appropriated considerable sums of money towards widening and deepening the Erie Canal, and the recent introduction of Steam Canal Boats, which are able to make the passage from Buffalo to New York, in from five, to six days, carrying a heavy load, renders still more difficult the competition of the St. Lawrence route, and calls for the utmost energy on the part of the Government of Her Majesty's North American Provinces, and there is no sacrifice too great, that should not be made to obtain the grain export trade for its natural outlet—the St. Lawrence River.

"There are two ways which would tend materially toward this desirable end : one by the construction of a ship canal from some port on Georgian Bay, Lake Huron, to a port on Lake Ontario : the other, by the widening and deepening of the Welland and St. Lawrence Canals. I understand that a survey in connection with the former project was made some years ago, but I have not been able to get any particulars about it. Against the latter project I do not think anything can be urged, and for either undertakings money could, I should think, be found. The attention of the Canadian Government has been recently called to the importance of the Western carrying trade, for I have before me a 'Report of a Select Committee appointed with power to inquire into the past and present course of trade between the lakes and the seaboard, and between the different Atlantic ports, in America and Great Britain &c.' This Report, which is dated 27th July, 1858, affords much useful information upon the subject, and I see that the Committee recommend 'that the St. Lawrence Canals should be immediately deepened to admit vessels of the same draft of water as those which pass through the Welland Canal and that a daily line of screw steamers of not less than 2,000 tons burden with a speed of from 10 to 12 miles an hour be put on between Liverpool and Quebec to connect with another line of steamers of 1,000 tons burden to the Welland Canal and Railway, Toronto, and Hamilton, intersecting a line of steamers on Lakes Erie and Huron to Chicago.'

"This is a most important step in the right direction, and I hope it may be carried out, but if a Ship Canal could be constructed between Georgian Bay and Lake Ontario, so as to enable large vessels to make the passage direct from Chicago and other Western Ports to Quebec, avoiding the St. Clair flats between Lakes Huron and Erie, that indeed would give the whole of the Western trade to the St. Lawrence route, and I think there can be no doubt that then direct Shipments from the West to European Ports would be found to afford a profitable remuneration to the Ship owners.

"There is one fact that must not be lost sight of, and that is that the State of New York will throw every impediment in her power in the way of the Western trade being diverted from her Canals ; but the rising and rapidly increasing political influence of the Western States will act as a counterpoise, and be thrown into the scale to obtain for her citizens the quickest return for their produce, even should it be necessary to use a British Channel to reach a speedy market. There is some difficulty in obtaining information as to the traffic of the Railways of the State of New York, which enter into competition with the Canals, as the Directors of these lines are unwilling that the particulars of their business should be known, fearing that the State finding that they draw off too much of the goods traffic from the Canals, may affix tolls which would interfere much with their carrying trade. Railways may do a large business in the carriage of some classes of freight, such as Flour, but cannot successfully compete with water carriage in the transportation of Grain in bulk. Their traffic, however, when the navigation closes, must always be very great.

“ The Erie Canal carried hence in 1857, 88,092 barrels of Flour, 6,673,827 bushels of Wheat, 5,001,263 bushels of Indian Corn, and 905,814 bushels of Oats, and though all this quantity did not reach the seaboard, there can be no doubt that a very considerable portion had its ultimate distribution there. The Oswego Canal carried during the same period 301,530 barrels of Flour, 2,728,429 bushels of Wheat, 1,850,394 bushels of Corn, and 12,257 bushels of Oats.

“ When we compare these figures with the transit returns by the St. Lawrence River, we can at once see how insignificant is the quantity which reaches the seaboard by the natural channel of exit, and it will be well to bear in mind that the navigation by way of Quebec, commences as early and continues as late as by the Erie Canal and the Hudson River.

“ According to the Canadian Report referred to before, the proportion of the Lake Trade diverted to New York, is six and one-half million tons, to about half a million forwarded to Quebec, and the comparative prices of freight from Chicago to the seaboard, average from 25 to 50 per cent. in favor of the St. Lawrence.

“ That the Canadian people are fully alive as to the importance of this Trade, there can be no doubt: and I expect to see active measures taken by the Government of the Province, during the present year, so as to secure at least a better share of the transit trade of the Western States than Canada has hitherto enjoyed.”

[Copy.]

“ Your letter of enquiry of the 28th inst. at hand, I enclose you the correct statement of the tonnage of the Lakes as taken from our Marine Register up to last November. Since then it has been in some measure reduced by losses, and but little added to it by construction. Our Registration of Tonnage is intended to be quite correct, probably not 2 per cent of the whole tonnage of the Lakes is left out; what I give you is the compilation of the work of 10 men (surveyors) who have personally examined all these crafts, at least once each year. There are many barges on the St. Lawrence, and some open boats on the Lakes used in carrying coarse articles, not included in this statement.

“ Your 2nd enquiry as to ‘ what proportion of these vessels draw above 8½ feet of water ? ’ can only be answered by estimate or computation.

“ We have on file in the office of the Board of Lake Underwriters here a detailed printed and written survey of each of these vessels giving their dimensions;—from an examination of these, and from my general knowledge of the vessels navigating the Lakes acquired during a period of 21 years’ personal experience, I should say that at least 90 per cent of the whole tonnage drew over 8½ feet of water. Any further information I can give you on this or any other subject within my power, please to command me. I shall be most happy to serve you.”

A Summary of the Tonnage on the Lakes and River St. Lawrence, October, 1859.

	No. of Vessels.	Tonnage.	Total Tonnage.
<i>United States.</i>			
Lake Steamers.....	41	39,477	
River Steamers	16	2,324	
Tugs [side wheel] River	9	1,825	
Ferry Boats [side wheel].....	2	122	
Lake Propellers.....	105	53,749	
River Propellers	7	550	
Lake Tugs [Propellers]	35	4,347	
River Tugs [Propellers]	31	1,722	
Ferry Boats [Propellers].....	2	568	
			104,684
Barques	43	17,515	
Brigs	79	22,860	
Schooners	832	17,4258	
Sloops	4	152	
			214,785
American Vessels.....	1,206	Tonnage.....	319,469
<i>Canadian.</i>			
Lake Steamers	22	10,188	
River Steamers.....	25	7,859	
River Tugs [side wheel]	12	3,322	
Ferry Boats [side wheel].....	3	2,288	
Lake Propellers.....	14	4,285	
Lake Tugs [Propellers].....	3	357	
River Tugs [Propellers].....	3	117	
			28,416
Barques	18	5,946	
Brigs	15	3,630	
Schooners	210	32,498	
Sloops	4	244	
			42,318
Canadian Vessels.....	329	Tonnage.....	70,734
Grand Total.....	1,535	.....	390,203

OSWEGO, February 20, 1860.

HON. JOHN ROSE,
Commissioner Public Works.

QUEBEC, CANADA EAST.

Dear Sir,—Your favor of the 20 ult. was duly received.

The Hon. Alvin Bronson, of this city, who has been long and extensively engaged in the commerce of the Lakes, has given your communication a careful perusal, and has prepared a reply to the general tenor of the same, a copy of which I herewith enclose, and to which I beg leave to call your attention.

To your several interrogatories I respond as follows:

Firstly.—At the time the Welland Canal was completed, in 1844, the average size of vessels engaged in that branch of the trade was of the burthen of about eight thousand bushels of wheat.

Secondly.—As to what proportion of that trade passed through the Welland Canal from the year 1844 downwards, I refer you to Schedule marked "A," hereto annexed.

Thirdly—About one thousand craft are now engaged in the trade of the Lakes, one fourth of which cannot pass through the Welland Canal. Three-fourths of all the propellers on Lakes Erie and Michigan are too large to pass the Canal.

Fourthly.—As to the receipts of produce from the Upper Lakes at Oswego, Ogdensburg, and other American Ports on Lake Ontario, keeping pace as regards progress increase with those of Buffalo, I refer you to Schedule marked "B," hereto annexed.

Fifthly.—A large proportion of the falling off in the receipts at the Ports on Lake Ontario, is due to the small size of the Welland Canal Locks ; but the enlarged Erie Canal, with low tolls, controls a large bulk of trade. If, however, the Welland Canal could accommodate the large Class Propellers, it is fair to suppose that much of the lost trade would return to Lake Ontario.

Sixthly.—Fully one-half the produce of the West is carried in vessels too large to pass through the Welland Canal.

Seventhly.—The Welland Railway will not materially increase the traffic of Lake Ontario, or get back the trade already lost, and does not render less necessary the enlargement of the Welland Canal.

Eighthly.—It is the opinion of the Board of Trade of Oswego, that in view of the present class of vessels now in use, and those likely to be hereafter employed in moving the products of the Great West, in connection with the direct Atlantic Trade, that the size of the Welland Canal Locks should be increased to 225 feet long and 40 feet wide, and that the depth of water should be not less than 12 feet

I have the honor to be,

Your obedient servant

(Signed,) O. H. HASTINGS,
President of the Board of Trade.

SCHEDULE A.

Statistics for the 2nd Query.

STATEMENT showing the Shipments of Grain (Flour reduced to Wheat) from Chicago, and Receipts of Flour and Grain at Buffalo and Oswego for a series of years :—

	Shipments from Chicago.	Receipts at Buffalo.		Receipts at Oswego.	
	Grain.	Flour.	Grain.	Flour.	Grain.
1836		139,178	543,461	No record previous to 1848.	
1837		126,805	550,660		
1838	78	277,620	974,751		
1839	3,678	294,125	1,117,262		
1840	10,000	597,742	1,075,888		
1841	40,000	730,040	1,852,325		
1842	586,907	734,308	2,015,898		
1843	688,907	917,517	2,055,025		
1844	923,494	915,030	2,335,568		
1845	1,024,620	746,750	1,848,040		
1846	1,599,819	1,374,529	6,493,522		
1847	2,243,201	1,857,000	9,868,187		
1848	3,001,740	1,249,000	7,396,026		4,312,329
1849	2,279,111				4,258,298
1850	1,830,938	1,103,039	6,637,004		4,619,127
1851	4,646,291	1,258,224	11,449,661	389,929	4,619,127
1852	5,873,141	1,299,513	13,892,947	272,343	7,867,408
1853	6,412,181	975,557	11,078,741	391,245	8,383,671
1854	12,932,320	739,756	18,533,455	167,267	5,592,903
1855	16,633,700	936,761	20,788,473	224,643	8,959,176
1856	21,583,221	1,126,048	20,123,667	202,930	12,632,306
1857	18,032,678	845,953	15,348,930	101,363	7,736,057
1858	20,035,116	1,551,590	19,712,727	96,663	10,839,125
1859	16,663,795	1,415,482	14,473,913	64,951	7,021,067

The receipts from Canada are included in the above.

SCHEDULE " B "

Statistics for the 4th Query.

STATEMENT showing the shipments of grain (wheat reduced to flour) over Lake Ontario, embracing the receipts at Oswego, Ogdensburgh, Cape Vincent, Genesee River, and Montreal, for the last four years, together with the receipts of grain alone at Buffalo during same periods :

	Shipments over Lake Ontario	Receipt at Buffalo
1856.	23,700,382	20,123,667
1857.	18,044,354	15,348,930
1858.	21,872,891	19,712,727
1859.	14,800,000	14,473,911

The above includes the movement of Canadian produce

O H HASTINGS, Esq.,

President of the Oswego Board of Trade

SIR—I have perused with care the document from the Canadian Board of Public Works, dated at Quebec, seeking information in relation to the contemplated enlargement of the Welland Canal, and beg leave to say that the statistics of trade called for, may be better obtained through other sources, where records of Commerce have been preserved; but I will give to the Commissioner of the Board of Works, through your Board, such general information, and without much method, as I have acquired from my business operations on, and in connection with this work, from its inception to the present time.

First premising that statistics of Trade, however elaborate, can afford but poor data to guide the judgment or action on this subject, owing to the almost numberless rival improvements, both contiguous and remote, which have sprung up since this work has been in operation, and owing still more to the fickle and ever changing policy of legislatures, Canal Boards and Corporations, in the administration of these rival works.

For example, our Legislature and Canal Board started with a revenue tariff, and pursued it, with occasional modifications, for many years, and until the Welland Canal and St. Lawrence threatened competition, when the revenue tariff was superseded by a protective tariff. Again, when Railroads were multiplied in our State and relieved from Canal tolls which their charters imposed, the protective tariff was pushed still farther, until revenue is almost annihilated, and the question now presents itself, and is one of most difficult solution, whether our Canal debt shall be redeemed by general taxation, or whether the revenue tariff shall be restored, fortified, and protected by Canal tolls re-imposed upon Railroads.

To complicate this subject still more, and baffle all calculations for the future, the long lines of Railroads have adopted the policy of competing with each other, and with the Lake and Canal Channels, for the trade of the Mississippi Valley; transporting its products and merchandise almost gratuitously, requiring the States and Provinces from whom they derived their franchises, under promise of public benefit, to remunerate them, through high charges on their products and merchandise, for their sacrifices to secure these distant customers.

The *theory* is, that the trade of their own States and Provinces belongs to them, and will bear any amount of imposition, and that all trade derived from the far West is clear gain. The *effort*, if pushed to its limit, will be to transfer the wheat fields and flouring Mills from the East to the valley of the Mississippi converting the State of New York and Canada West into grazing farms, with no other products than butter, cheese, wool, and animals that may be driven to market on foot, leaving the Railroads to make the most of their Western Customers, having killed the Goose for the Golden Egg. A system so vicious cannot last. It must be ended by popular indignation or the ruin of the roads.

Competition

Premising this much on the statistics of trade, I proceed to discuss the main subject of Canal enlargement. And first, I assume, as a self-evident proposition, that large lakes

and long rivers, as channels of general commerce, are superior to artificial channels, whether Canals or Railroads, involving, as they do, a heavy outlay for construction, repairs, and superintendence.

In point of prices for transportation of commodities, beginning with the cheapest, the different channels may be classed as follows :

First.—Ocean navigation.

Second.—Lakes, Rivers, and Sounds.

Third.—Canals, Ship and Boat.

Fourth.—Railroads.

A few comparisons between prices for transport, on Lakes, Rivers, and Sounds, with those of Railroads, will confirm this proposition, and suffice for the purpose of the discussion.

The current price for transporting a barrel of flour from Albany to Boston by Railroad is 30 cents, the distance 200 miles. By water, a voyage made up of River, Sound, and Ocean, usually broken at New York, 15 cents, distance 600 miles. From Albany to New York, the usual price of a barrel of flour by river is 7 cents, distance 150 miles. By Railroad in winter, 30 cents. In summer there is no competition, and therefore no price; but taking the Western Road from Albany to Boston for data, the charge in summer by rail should be 22½ cents against 7 cents by water.

When a chain of roads has combined to transport beef from Chicago to Boston (Nov. 23rd., '59) at 44 cents per 100lbs., they have pro-rated or apportioned this charge as follows :

Allowing the Michigan Central from Chicago to Detroit,	- - -	283 miles	14 cts.
Lake Erie, Detroit to Buffalo	- - - - -	350 "	5 "
New York Central	- - - - -	298 "	15 "
Western Road to Boston	- - - - -	200 "	10 "
			<hr/> 44 cts.

Again (Nov. 23, '59) Beef, from Chicago to New York 100 lbs for 39 cents, as follows :

Michigan Central, from Chicago to Detroit,	- - - - -	283 miles	13 cts.
Lake Erie, Detroit to Buffalo,	- - - - -	350 miles	5 "
New York Central and Hudson R. R. Road	- - - - -	500 miles	21 "
			<hr/> 39 cts.

The shore roads beyond the Lakes and beyond the Mississippi, where severe competition is not encountered, usually charge about 10 cents per bushel per 100 miles for the transportation of wheat, whereas the lake craft transport a bushel of wheat from Chicago through four of the great Lakes for 10 cents, exclusive of the Welland Canal charge, or say 2 cents, a distance of more than 1200 miles.

These cases are sufficient to dispose of the subject of comparative cost of these two modes of transportation.

There is another important element in this rivalry for the trade of the valley on the Mississippi, consisting in the topography of the country, or locality of the lakes.

Lakes Superior, and Michigan, bound this valley on the East, and stretch from high latitude, many hundred miles south, parallel to the river, and almost to the point where Eastern and Northern markets cease to attract the trade from the river and gulfs. The Railroads, therefore, to divert this trade from its natural and cheap channels, the Lakes, must perform a detour around them, or submit to have their chain broken, and their freights subjected to a *short* and therefore comparatively an expensive voyage across them.

The character of short voyages will be explained in another part of this paper. These facts make it apparent that Railroads cannot compete successfully for this distant trade, and it would seem the part of wisdom to yield the conflict which must involve heavy expenditures, which must provoke reprisals, and end in a loss of a portion of the legitimate trade, and in cutting down their tariff on the residue.

Railroads have their legitimate field, which, under judicious administration, will sustain them. It is their office to conduct the trade from point to point, between the

natural and cheaper channels, as between the Mississippi and the Lakes, and between the Lakes, the St. Lawrence, and the Atlantic markets.

The roads are entitled to the freight traffic contiguous to their lines, and beyond the attraction of the cheap and natural channel; they may command the valuable and perishable goods, that demand celerity and dispatch, and will monopolize the passenger and the winter traffic. Such will be the relative condition of these rivalries when the battle shall have been fought out and commerce shall have found its appropriate and natural channels, whatever fate may await the bond and stockholders. Canals, either boat or ship, were never projected or constructed as rivals to natural channels, but as tributaries to feed, or links to connect and extend them. Thus, the St. Mary's, the Welland, and the St. Lawrence Ship Canals connect the Lakes with each other, and all with the Ocean.

While the boat canals of New York, connect the Lakes with tide water; and the Ohio, Indiana, and Illinois Canals, connect the Lakes with the Mississippi; still these Canals co-operate with, and fortify, great rival routes for commerce, as the St. Lawrence, the Hudson, and the Mississippi. Though laudable competitors, and ministering to the welfare of the country at large, yet their influence upon the work in hand must not be overlooked.

After this exposition it is hardly necessary to express the opinion that the Lake route, with the Welland Canal suitably enlarged and improved, can maintain a successful competition with all others.

Welland Railway.

It may be prudent to restrict or limit the enlargement of the Canal in some small degree, in consideration of the services which the railway may perform by lightening overloaded vessels, when for short periods as sometimes happens, the waters of the Lakes run high, and the harbors allow deep loading, or when a vessel of extraordinary size may load for a sea voyage. I am of opinion that Indian corn, an important article of commerce, will bear an extra charge for the benefit of being elevated, transported and spouted to another vessel, midway of the voyage.

I do not believe the railway can be made to feed lines of vessels on the upper and lower Lakes, either with merchandises or agricultural products, and for the following reasons.

The price of freight depends greatly on the continuity of the voyage; the long voyage is the cheap one, compared to distance. The delay and expense of loading and discharging constitute an important item in the expense of the voyage, and is the same whether the voyage is long or short.

For example; a wheat laden vessel at Chicago, charging 7 cents per bushel to Detroit, would be amply paid for extending her voyage to Buffalo, or the Welland Canal, by an addition of 2 cents per bushel, and for another cent through Lake Ontario excluding Welland Canal charges; the most distant point, therefore, has the strongest attraction for trade. Hence a long voyage broken up into two short ones would enhance the cost of transport without adding much, if at all to despatch. A new voyage across Lake Ontario would involve a charge of three or four cents per bushel on wheat, instead of one cent for a continued voyage.

Hence the expensive short voyage across Lake Michigan connecting railroad traffic.

Size of Enlargement

Great diversity of opinion prevails both among practical and scientific men as to the size of lock and canal best adapted to the wants of this trade; some gentlemen whose opinions are respected, advocate a lock the size of the St. Mary's to pass the large side-wheel passenger boats. I am of opinion on the contrary, that the work should be adapted to the freight trade of Propellers which will of course meet the wants of the sail vessels, both of which will probably continue to share this trade in nearly equal proportions.

As the work increases in size, the cost increases in a rapid ratio, demanding larger amount of funds, and longer time for completion; and when breaks occur, they are more destructive in their effects upon the work and the region adjacent.

If too small again, though more easily and quickly completed, the object is not obtained of meeting rivalry effectively.

I am of opinion that a lock 225 feet in length, with 11 feet water on mitre sill, would be a judicious size; 35 or 36 feet in width would be sufficient, were it not deemed exped

ient to conform them to the St. Lawrence locks 45 feet in width, which would serve to pass small side wheel steamers; nor is there any strong objection on the score of feeding or of current. The feeders are copious, and at short distances from the locks; besides the large volume of trade is in the direction of the current. Since the locks were enlarged in 1844, the tonnage of our vessels and their carrying capacity has been steadily increasing from a burthen of eight or nine thousand bushels of wheat to fifteen or sixteen thousand, the usual burthen for modern built vessels.

During this rapid and great increase in size of vessels, the depth of water in the canal and lock has been increased but one foot from 9 to 10 feet. The largest class of vessels are not however passed with the ease and facility which ought to attend them.

Most of the harbors of the Lakes, as well as the St. Clair Flats, require frequent and considerable expenditures to give 11 feet of water, except in periods when the lakes rule high; these periods are not frequent or long continued. There may be instances in which Propellers are loaded beyond 11 feet, but these are exceptional cases.

Experience has proved that long and flat vessels can navigate the ocean with safety and success, and that the centre board or sliding keel is a pretty good substitute for the standing keel.

Experience proves also, that large vessels are most profitable, and there are isolated cases of vessels passing regularly through the Welland Canal with 18,000 bushels of wheat, sail vessels, bark or schooner rigged.

Respectfully your obedient servant,

(Signed)

ALVIN BRONSON.

OSWEGO, Feb. 16th, 1860.

WELLAND CANAL OFFICE,

St. Catherines, February 22nd, 1860.

HON. JOHN ROSE, Com. Public Works, Quebec.

Sir,—I submit the following information in answer to the queries contained in your letter of 20th January last, addressed to the respective Boards of Trade of Oswego, and Ogdensburgh.

1st. "At the time that the Welland Canal was completed in 1844, what was the number and average size of Vessels (engaged in that branch of Trade) on Lakes Michigan, Huron, and Erie, connected with the movement of produce eastward, either via Buffalo or Lake Ontario."

Answer.—The enlargement of the Welland Canal was opened to the Trade in the spring of 1845. The number of Sailing Vessels on Lake Erie, and above the Welland Canal, was in 1844 as follows, viz:—

109 Vessels, over 100 Tons each, with capacity of - - - - - 16,173 Tons.

118 do, under 100 Tons each, do do - - - - - 8,388 do.

6 Propellers with capacity of - - - - - 1,417 do.

1 Barque, do do - - - - - 377 do.

234 Vessels and Propellers, with capacity of - - - - - 26,355 do.

Of the above there passed through the Welland Canal in 1844, 42 Vessels, capacity 4001 Tons.

Lake Ontario Vessels passing Welland Canal..

119 Brigs and Schooners with capacity of, - - - - - 15,844 Tons,

8 Propellers, - - - - - 880 do

127

16,724 Tons,

In addition to the foregoing there were:

8 Large Brigs that could not be passed through the Canal in 1844, of 4,050 tons burthen.

The foregoing list is exclusive of Passenger Steamers navigating either or any of the Lakes.

By the enlargement of the Canal all of the above vessels and propellers, viz: 361, were enabled to pass through it, except 8 large brigs on lake Ontario, one of which was afterwards so altered as to navigate the Canal.

2nd. What proportion of that trade passed through the Welland Canal for the year 1844 downwards, distinguishing the several years?

Answer.—The following Table shows the proportion of that trade that has been passed through the Canal; respecting the data of the whole trade, I have no information.

	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	1859.
Vessels & boats, all kinds	4276	3610	3905	4214	3280	2278	4761	5693	6162	6714	5863	6779	6766	6239	5700	3758
Passenger .....	.....	.....	.....	.....	2487	1640	1938	4758½	6543	19631	5638	15276	17424	17232	10599	1074
Ton. Freight.....	2285712	2437412	318095	343852	307611½	351596½	399600	691627½	743060	905518	797210	849333	976705	901072	855112	1012201½
Tonnage, vessels all kinds	327570	312571	385909	453584	372854	468410	587100	772623	894193	1063624	947738	1051467	1179246	1148434	1148771	988560

In the Return for 1859, it is possible that there may be discrepancy in the tonnage and number of boats, as compared with the Return made up at the Inspector general's Office. This difference may be accounted for by their having included Rafts, &c., in their Return, which are not included in my Table.

3rd—What is the present estimated Tonnage and average size of vessels engaged in same trade? What proportion passes through the Welland Canal? and what proportion from too great size, cannot pass?

Answers.—The Tonnage of the Steam and Sailing craft, from Montreal, upwards, is follows, viz :

Above Welland Canal.

67 Paddle Wheel Steamers, capacity	- - - - -	41,171 Tons.
145 Propellers	" - - - - -	54,330 "
794 Sailing Vessels	" - - - - -	180,273 "
<hr/> 1,006		<hr/> 275,774 Tons.

Below Welland Canal.

63 Paddle Wheel Steamers, capacity	- - - - -	25,899 Tons.
52 Propellers	" - - - - -	12,874 "
371 Sailing Vessels	" - - - - -	76,552 "
<hr/> 486		<hr/> 115,325 Tons.

Above Welland Canal that can pass through it.

8 Paddle Wheel Steamers, capacity	- - - - -	1,384 Tons.
60 Propellers	" - - - - -	6,368 "
671 Sailing Vessels	" - - - - -	182,410 "
<hr/> 739		<hr/> 140,162 Tons.

Below Welland Canal, that can pass through it.

6 Paddle Wheel Steamers, capacity	- - - - -	1,872 Tons.
47 Propellers	" - - - - -	10,722 "
371 Sailing Vessels	" - - - - -	76,552 "
<hr/> 424		<hr/> 89,146 Tons.

Above the Welland Canal, that cannot pass through it.

69 Paddle Wheel Steamers, capacity	- - - - -	39,787 Tons.
85 Propellers	" - - - - -	47,962 "
123 Sailing Vessels	" - - - - -	47,863 "
<hr/> 267		<hr/> 135,612 Tons.

Below the Welland Canal, that cannot pass through it.

57 Paddle Wheel Steamers, capacity	- - - - -	24,027 Tons.
5 Propellers	" - - - - -	2,152 "
0 Sailing Vessels	" - - - - -	0,000 "
<hr/> 62		<hr/> 26,179 Tons.

Steam and Sailing Craft upon all the Lakes, that can not be passed thro' the Welland Canal.

116 Paddle Wheel Steamers, capacity	- - - - -	63,814 Tons.
90 Propellers	" - - - - -	50,114 "
123 Sailing Vessels	" - - - - -	47,863 "
<hr/> 229		<hr/> 161,791 Tons.

Steam and Sailing Craft upon all the Lakes, that can be passed through the Welland Canal.

14 Paddle Wheel Steamers, capacity	- - - - -	3,256 Tons.
107 Propellers	" - - - - -	17,090 "
1042 Sailing Craft	" - - - - -	208,962 "
1,163		229,308 Tons.

Of the following Steamers and Propellers, the number used as Tugs and Ferry Boats, and not capable of carrying freight, is, as near as can be ascertained :

15 Paddle Wheel Steamers, capacity	- - - - -	1,910 Tons
63 Propellers	" - - - - -	5,968 "
78		7,878 Tons.

4th.—Have the receipts of Produce from the Upper Lakes at Oswego or other American Ports on Lake Ontario, kept pace, as regards progressive increase, with those of Buffalo? And can you supply any returns shewing the difference?"

Answer.—With regard to this Query, I have no data, to afford the information required.

5th.—"If not, whether do you attribute the falling off mainly to the inadequate size of the Welland Canal, or to the enlargement of the Erie Canal and the additional Railway facilities afforded for Transit from Lake Erie to the Sea Board, or have not facilities to an equal extent been created from Ports on Lake Ontario?"

Answer.—The Trade from the Upper to the Lower Lake Ports has been considerable, with fluctuations arising in a great measure through the failures of Crops and business embarrassments.

The falling off of the Trade to Oswego, if any, (of which, in the absence of statistical information, I am not aware) may be in some degree attributable to the present size of the "Welland Canal," and the enlargement of the "Erie Canal," and to the "additional Railway facilities afforded for Transit to the Sea Board." It is quite probable that were the dimensions of the Welland Canal increased, the facilities rendered thereby would give more advantage for shipment from the Upper to the Lower Lake Ports, and there is not the least doubt that, were these advantages afforded, the Trade of the Welland Canal would be considerably increased.

Whether this increase of Trade would justify the expenditure, consequent upon the enlargement, is a matter requiring much consideration.

In my humble opinion, with the present existing facilities, the outlay would not be justifiable, although I am aware that this matter is much agitated by persons who do not calculate the cost or its results, only caring that the expenditure be made.

My reasons for arriving at this conclusion are formed from the present capabilities of the Welland Canal (which are sufficient for not less than three-fold the traffic that has yet been passed through it,) and the existing advantages for the transportation from the West to the Ocean by the numerous Railways, of which there are five in Canada, and four in the United States competing for this freight. They have also the additional advantage of being able to carry freight during closed navigation; Whilst, during the season of navigation, they, (the Railways) are rivals to the Canals, carrying freights at ruinously low rates.

Through the business operations of the Railways, in carrying off the produce, while the navigation is suspended, there is not sufficient Surplus, (as formerly), to afford remunerative freights, consequently, the shipping interests have become much depressed, thereby causing injury to the Canal Trade.

In Addition, the business facilities afforded Western Shippers of Produce by other Routes, has a tendency to divert the trade from the Welland Canal. As it is impossible for the Government to render such assistance (as Cash advance) to Shippers of produce passing through the Welland Canal, consequently its Trade will continue to be injured so long as such advances are upon Produce transported by other Routes. It is believed that the facilities for transportation from "Ports on Lake Ontario" are adequate, with the

exception of the depth of water on the Mitre Sills of the St. Lawrence Canal Locks, which should be increased to not less than 10 feet.

6th.—What proportion of the Produce is carried in vessels too large to pass through the Welland Canal.

Answer.—Have no data to afford the information.

7th.—Do you consider the Welland Railway calculated to attract the Trade to the Basin of Lake Ontario, or that the facilities it affords render less necessary the enlargement of the Welland Canal?"

Answer.—Through the facilities afforded, and referred to in answer to Query No. 5, I consider that the Welland Railway will attract trade to the Basin of Lake Ontario, and also as stated in answer to said Query, I do not consider the enlargement of the Welland Canal necessary.

8th.—Looking at the class of Vessels now in use, and likely hereafter to be employed on Lakes Superior, Huron and Michigan, in connection with the direct Atlantic Trade, to what size and depth would you consider the Canal ought to be enlarged?"

In Answer to this Query, as I have already stated, I do not consider that the enlargement of the Welland Canal ought to be made. But should it be decided otherwise, there are two important points to be settled before the dimensions of the enlargement can be determined; whether it is to be made so as to admit the passage of the largest class of Paddle wheel Steamers, or for Propellers.

If for the former, the Locks should be of the same size as those at the Sault St. Marie Canal, 350 feet in length, 75 feet wide, and not less than $12\frac{1}{2}$ feet depth of water on the Mitre Sill.

As this class of Steamers are more properly suited for a passenger than a freight trade, the adoption of Locks of a size suitable for propeller navigation appears the more advisable, and would, I think, be the better calculated dimensions for the enlargement. This point being determined, the capacity of the Locks need not necessarily be greater than 250 feet long, 50 feet wide, with $12\frac{1}{2}$ feet depth of water on the Mitre Sill.

By the establishment of these dimensions there would be but 3 propellers now in existence, above the Canal, that could not be passed by, their lengths being each 270, 266, and 240 feet.

I have the honor to be, Sir,

Your obdt. servt.,

S. D. WOODRUFF.

Following Table furnishes the dates of Departure and Arrival, length of Voyage, number of Passengers and Cargo, inwards and outwards, by the Steamers of the Montreal Ocean Steamship Company's line for the season of 1859, by the St. Lawrence.

STEAMSHIP.	Left Liverpool	Arrived at Quebec	Passage		No. of Passengers	Cargo inwards.		Total.	Left Quebec.	Arrived at Liverpool.	Passage		No. of Passengers	Barrels of Ashes.	Barrels of Flour.	Bushels of Grain.	Kegs of Butter.	Standard Deals.	Tons of India Rubber Goods	Barrels of Pork &c.	Tons of Sundries.
			days	hours		Weight	Tons				days	hours									
North Briton.....	Apl 20	May, 2	11	15	184	356	747	1103	M'y, 14	M'y, 25	11	2	201	783	.....	.....	.....	175	19	.....	25
Anglo Saxon.....	" 27	" 9	11	16	99	122	136	258	" 21	June, 1	10	11	94	650	.....	548	.....	.....	7	.....	28
Nova Scotian.....	May, 4	" 16	12	11	119	362	167	529	" 28	" 8	11	0	358	990	.....	.....	.....	.....	17	498	45
North American.....	" 11	" 22	11	7	114	255	137	422	June, 4	" 14	10	3	125	688	.....	8774	.....	.....	8	.....	20
Hungarian.....	" 18	" 30	12	2	105	364	161	525	" 11	" 20	9	6	156	870	.....	.....	.....	.....	16	978	45
Indian.....	" 25	June, 6	12	3	92	393	263	656	" 18	" 29	10	6	114	631	.....	.....	94	.....	15	74	25
North Briton.....	June, 1	" 11	10	8	134	321	186	507	" 25	July, 5	10	6	77	429	.....	.....	107	.....	13	.....	250
Anglo Saxon.....	" 8	" 18	10	5	115	536	233	769	July, 2	" 11	9	5	99	354	3000	.....	.....	.....	7	49	160
Nova Scotian.....	" 15	" 27	12	7	125	503	207	710	" 9	" 19	10	3	127	294	.....	.....	.....	.....	18	.....	60
North American.....	" 22	July, 3	11	6	120	200	195	395	" 16	" 27	10	14	99	660	.....	.....	.....	.....	16	.....	30
Hungarian.....	" 29	" 8	9	14	133	139	367	506	" 23	Aug., 1	9	6	101	293	.....	.....	86	.....	36	.....	60
Indian.....	July, 6	" 18	11	17	126	275	315	590	" 30	" 10	11	4	82	1005	2000	5000	.....	14	.....	.....	25
North Briton.....	" 13	" 24	10	23	185	223	353	576	Aug., 6	" 16	10	1	51	650	.....	6680	.....	.....	15	290	35
Anglo Saxon.....	" 20	" 30	10	6	147	166	634	800	" 13	" 23	9	6	58	435	2000	.....	.....	.....	15	.....	48
Nova Scotian.....	" 27	Aug., 7	11	7	153	93	847	940	" 20	" 30	9	21	79	151	.....	.....	79	.....	23	.....	30
North American.....	Aug., 3	" 13	10	6	140	195	771	966	" 27	Sept., 6	10	2	74	638	3139	.....	199	.....	14	.....	35
Hungarian.....	" 10	" 20	10	9	211	221	899	1120	Sept., 3	" 13	9	18	108	528	2256	.....	457	.....	18	211	35
Indian.....	" 17	" 29	11	15	141	301	826	1127	" 10	" 20	9	16	102	363	4915	148	412	.....	19	.....	30
North Briton.....	" 24	Sept., 5	11	21	233	136	672	808	" 17	" 29	11	8	71	423	247	1840	488	.....	15	22	40
Anglo Saxon.....	Sept., 1	" 12	11	15	200	269	552	851	" 24	Oct., 4	10	3	101	484	449	6870	644	.....	11	80	25
Nova Scotian.....	" 7	" 22	14	6	179	166	492	658	Oct. 1	" 14	10	8	102	389	1518	4788	491	.....	20	.....	30
North American.....	" 14	" 25	11	6	100	246	398	644	" 8	" 20	10	0	87	352	3869	4974	574	.....	14	.....	10
Hungarian.....	" 21	Oct., 1	10	3	117	244	371	615	" 15	" 27	11	18	144	693	2224	6944	324	.....	14	16	4
Indian.....	" 28	" 10	11	17	130	392	305	698	" 22	Nov., 3	11	22	88	903	2601	8304	156	.....	22	.....	5
North Briton.....	Oct., 5	" 16	11	5	118	274	293	567	" 29	" 11	13	5	121	417	2105	22124	317	.....	16	.....	4
Anglo Saxon.....	" 12	" 23	10	11	96	231	273	504	Nov., 5	" 15	10	7	102	695	574	20030	31	.....	10	.....	35
Nova Scotian.....	" 19	" 29	10	7	121	96	211	307	" 12	" 23	10	17	128	429	1526	7728	.....	8	.....	14	60
North American.....	" 26	Nov., 7	10	20	99	190	348	538	" 19	" 30	10	18	101	789	1880	8202	246	.....	7	.....	23
	28 voy., avr.		11	5	3644	7300	1389	18689	28 voy., avr.		10	10	3150	15986	34303	112954	4868	.....	427	2232	1212

GENERAL REPORT

OF THE

COMMISSIONER OF PUBLIC WORKS,

FOR THE

YEAR ENDING 31ST DECEMBER, 1860:

FURNISHED

IN ACCORDANCE WITH
the provisions of the 28th chapter of the Consolidated Statutes
of Canada, section 24.

Printed by order of the Legislative Assembly.



QUEBEC.

PRINTED BY THOMPSON, HUNTER & CO., ST. VESULE STREET
1861



GENERAL REPORT

OF THE

Minister

COMMISSIONER OF PUBLIC WORKS,

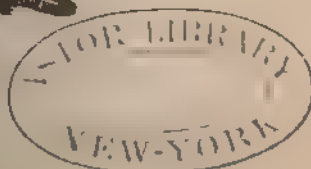
FOR THE

YEAR ENDING 31ST DECEMBER, 1860:

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DEPARTMENT OF PUBLIC WORKS,
Quebec, 1st March, 1861.

R E P O R T

OF THE

COMMISSIONER OF PUBLIC WORKS,

FOR THE YEAR 1860.

To His Excellency the Right Honorable Sir Edmund Walker Head,
GOVERNOR GENERAL OF BRITISH NORTH AMERICA, ETC., ETC.

MAY IT PLEASE YOUR EXCELLENCY:—

The Commissioner of Public Works has the honor, in obedience to Law, to submit to your Excellency the following Report for the year 1860, of the various branches of the Public Service under his management.

He abstains from offering any lengthened observations with respect to the policy which should be pursued, to render the great works of internal communication more productive. The considerations which induced him to bring that important question under the special notice of your Excellency, in last years Report, are there fully set forth. He has but to add, that the experience of the present year has tended to confirm the views he has expressed; and, it is but reasonable to anticipate, that the events which are taking place in the United States, will have the effect of increasing, largely, the amount of Western Trade by the St. Lawrence, which will necessarily demand a corresponding increase in the facilities of transport.

The system of classifying the expenditure of the Department, introduced last year, has been continued. The excess over 1859, it will be seen, is altogether for Permanent Works, or for services of an exceptional character; and the reductions previously effected in the general administration of the Department, have been continued.

The Commissioner desires to bear testimony to the constant zeal and industry of the officers, as well of the Department, as of those in charge of the various Works—willing assistance they have, in times of unusual pressure, been always ready to extend.

The gross expenditure for the year 1860, was \$1,628,535.19, for the following vices:—

1st. Permanent charges, comprising Superintendence and Management of all works; rents of Public Buildings; Pay Lists; Departmental and other Salaries; portion of charges incurred on Construction account. \$

2nd. Repairs and Renewals of existing Works. - - - - -

3rd. Extension and enlargement of existing Works, or extraordinary repairs, applicable to construction. - - - - -

4th. New Permanent Works, viz: Parliament Buildings, Court Houses, Custom Houses, Roads, Light-Houses, Harbours, &c.; chargeable to construction account. - - - - -

5th. St. Lawrence, Upper and Lower Tug, and Trinity House Services; and Postal extension, Lower Provinces - - - - -

Balance for 1859 - \$46,357.69

do for 1860 - 62,160.15

6th. Old claims for damages, &c., and those arising out of previous contracts, settled during the present year; arbitrations and awards, including Beauharnois Canal damages; and Miscellaneous. - - - - -

7th. Removal to Quebec. - - - - -

8th. Visit of H. R. H. the Prince of Wales—amount of certificates issued to 31st December, - - - - - \$200,631.98

Less Refunded to the Receiver General

by W. B. Lindsay. - - - - - 3,002.00

by J. F. Taylor. - - - - - 3,846.20

6,848.20

Proceeds of Sales to date, paid to the Receiver General. - - - - - 19,926.38 26,774.58

\$1

THE FOLLOWING STATEMENTS ARE APPENDED TO THIS REPORT

No. 1. Statement of the several Public Works, under the charge of this Department, which are in use and yield revenue; showing the expenditure under the different heads during the year 1860, viz; on construction, the amount paid for Land Damages

total cost of construction *under this Department*, to the 1st January, 1861; together with the cost of repairs and management for the same period.

No. 2. Statement of the Public Works under the charge of this Department, incomplete, and as yet unproductive, but on which tolls are to be levied, as soon as they are available,—showing the expenditure thereon in 1860, on construction, on repairs and management, and the total expenditure up to 1st January, 1861.

No. 3. Statement of the several Public Works and Buildings in course of construction, under the charge of this Department, yielding no direct revenue, but in use for the Public Service, and authorized by Legislative appropriations, shewing the amount expended thereon during the year 1860, and the total outlay upon them up to the 1st January, 1861. Also, the amount expended in repairs and maintenance for the same period.

No. 4. Statement of expenditure on certain miscellaneous services under this Department during the year 1860.

No. 5. Statement of the expenditure incurred under this Department for repairs and management of the Ordnance Canals for the year 1860, and the revenue therefrom for the same period.

No. 6. A detailed Statement of the expenditure incurred in repairs and maintenance of the Provincial Light Houses for the year 1860, under this Department.

No. 7. Statement showing the total amount expended, under the Department of Public Works, during the year 1860, as detailed in the foregoing Statements, numbered 1, 2, 3, 4, 5 and 6.

VISIT OF H. R. H. THE PRINCE OF WALES.

The duty of making becoming provision for the reception and conveyance of His Royal Highness, on the occasion of his visit to this Province, as the representative of Her Most Gracious Majesty, was entrusted to this Department by Order in Council of the 22nd May, 1860. The Legislature having, by a vote of credit, authorised the necessary expenditure, the undersigned endeavored to make such arrangements as might be worthy of so auspicious an event. In discharging this duty, the most cordial co-operation was afforded by the various Cities and Municipalities of the Province. All were animated by

one common impulse, of extending a loyal and becoming welcome to the illustrious guest and the local arrangements made in many places greatly facilitated the duties of this Department. It became necessary to prepare suitable residences for the Royal party at Quebec, Montreal, Ottawa, Kingston, Toronto, Hamilton, London, and Niagara, as well as to provide for their conveyance from one point to another.

It is deemed needless to advert in detail to the manner in which the several services were performed. The undersigned cannot, however, omit making a public acknowledgment, in the present Report, of the zealous and efficient assistance afforded by all those to whom the several duties in connection with the Visit were assigned.

The gross amount of expenditure by this Department, for accounts paid up to the 1st March, 1861, which is required to be made good, is \$232,374.23, or, deducting the proceeds of articles sold, and sums refunded, \$204,962.73.

In addition to this, there are some unsettled accounts, for the payment of which, the sum of \$30,000 is reserved. It is anticipated that this sum will amply suffice to meet all claims.

PROVINCIAL STEAMERS.

It is satisfactory to be able to state, that the anticipations held forth in the last year's Report, and the calculations on which the appropriation was obtained, have been fully verified.

It was estimated that, by the judicious employment of the four steamers, services which would have cost the Province, if performed by contract, £25,800 a year, might be executed for £10,000 ; and the undersigned has the satisfaction of reporting, that these expectations have been entirely fulfilled.

The whole requirements of the Trinity House ; the remote Light House service ; the Mail service to the Lower Provinces ; the chief part of the Fishery service ; and such assistance as the trade required in towing and for the relief of disabled ships, have all been performed.

The gross outlay for these services, and for towing was, - - - - .	\$52,600.88
The earnings actually received up to the 1st December, were, - - -	17,011.40

Making the actual cost to the Province, - - - - - \$35,589.48
\$4,410.52 less than the appropriation of \$40,000 voted last Session. This sum is sub-
t to a still further reduction of \$8,010.11, as hereafter stated.

In addition to the duties contemplated in last year's Report, the special use of the
amers was required, in connection with the visit of H. R. H. the Prince of Wales;—the
amers "Victoria," and "Napoleon III," having been commissioned to proceed to Gaspé
d the Saguenay, and the "Advance" being employed, for upwards of ten weeks, as a
reship from Quebec to Niagara, and back.

This exceptional service entailed an extra outlay, for which the account in connection
ith the visit of His Royal Highness has been debited, and the Steamers' operations cre-
ted with the sum of \$7,550. This sum is very much under what the service could have
een performed for, had the Department been obliged to resort to contract.

The following statements exhibit the result of the season's operations; distinguishing
he ordinary service from the exceptional one.

Statement No. 1.

Exhibiting cost at which the services were performed, for which appropriation of
of \$40,000 was granted, viz: Trinity, Light House, Lower Port Mail, and Fishery ser-
vice, and relief of Ships.

Expended on these services and towing - - - - -	\$52,600.88
---	-------------

Less.

Earned by Steamers, and actually received in Cash; exclusive of sundry accounts yet to be received - - - - -	17,011.40
---	-----------

Cost of these services to Government, for the year ending 1st Dec., 1860.	\$35,589.48
---	-------------

<i>Deduct further</i> —Outstanding Accounts and Stock on hand available for future operations - - - - -	8,010.11
--	----------

Actual cost of services for 1860 - - - - -	\$27,579.37
--	-------------

Being less than Appropriation by - - - - -	12,420.63
--	-----------

Amount of Appropriation - - - - -	\$40,000.00
-----------------------------------	-------------

Statement No. 2.

Shewing entire operations, including services of every description, and those on the
ision of the visit of His Royal Highness the Prince of Wales.

Total expenditure on all services including those enumerated in State- ment No. 1. - - - - -	\$60,150.88
---	-------------

Deduct.

Actual earnings and sums refunded for, and charged to special services for which the extraordinary expenditure was incurred - - - -	24,561.40
Balance made good out of appropriation, which is yet to be reduced by outstanding accounts and stock of Coals, &c., on hand for next year,	\$35,589.48
Appropriation, 23 Vic., Cap. 15 - - - - -	\$40,000.00
Amount taken from Appropriation to make good deficit between outlay and earnings - - - - -	35,589.48
Balance at credit of Appropriation - - - - -	\$4,410.52

Add.

Stock of Coals, &c., on hand ; and outstanding Debts, available for ser- vice of 1861. - - - - -	8,010.11
	\$12,420.63

In pursuance of the policy, formerly recommended, of disposing of the Iron Steamers, tenders were invited by advertisement in the principal newspapers, both of Canada, of the Lower Provinces, and of the chief cities in the United States ; but no offer, such as could be recommended for acceptance, has as yet been received. Until they are disposed of, it would seem—(judging from the experience of the past year)—to be for the public interest, to employ them in the same way as during the year 1860.

The same arrangements as regards staff, crews, wharfage, provisions, coals, &c., have been continued.

Before concluding the observations on this subject, the undersigned cannot omit bearing testimony to the valuable advice and suggestions which were, at all times, readily and cordially afforded by the late Contractor, Mr. Baby, and to the zeal and efficiency, as well of the Manager, Mr. Buteau, as of Captains Gourdeau, Davidson, Pouliot and Marmen, and of the entire staff employed in navigating the ships.

THE PROVINCIAL CANALS.

WELLAND CANAL.

This Canal was opened on the 1st of April, and, with few interruptions, was maintained in good working order throughout the season, for vessels drawing ten feet water, until it was closed by frost on the 6th December, making 250 days of navigation, including

The Interruptions.

The most serious interruption of the navigation, this season, was caused by a propeller carrying away the gates of the Allanburg Lock on the 7th May ; but, by the energy and promptitude of the Local Superintendent, new gates were inserted, and the passage of vessels resumed in four days time. The only other stoppage, of any consequence, occurred on the 19th October, and was occasioned by the negligence of the servants of the Buffalo and Lake Huron Railway Company, in not bringing the eastward bound train to a stand before crossing the Swing Bridge at Port Colborne, as required by law, in consequence of which the bridge was pushed over into the Canal, and thirty-five hours consumed in lifting it up and restoring it to its right position, in which time no less than eighteen vessels had accumulated at the point of obstruction.

Repairs and Management.

Notwithstanding the heavy repairs required to make good the damage done to the piers at Port Colborne and Port Maitland by the storms of November 1859, alluded to in last year's Report, the cost of repairs and management continue to exhibit a decrease, when compared with those of previous years, as the following statement will shew :—

Cost of	In 1858.	In 1859.	In 1860.
Repairs and Management, - - - -	\$104,509.63	\$78,573.16	\$66,312.60

Works of Construction.

The dredging operations on the Summit Level, above Allanburg, intended eventually to make Lake Erie the feeder for the Canal, have been steadily prosecuted, during the past year, by the contractor, Mr. Brown, with his usual force ; and, with a view of hastening their completion, he has recently provided himself with another dredging machine of increased power, to be applied upon the work next season. The necessity for this increase of plant was rendered apparent by the very scanty supply of water afforded by the Grand River during the past season, and by the measures which are now required to be taken to husband that supply.

The amount required to be appropriated this year, to carry on these dredging operations, is \$60,000.

The other works authorized, and either completed or in progress, comprise the raising of the piers at Port Colborne and Port Maitland, now completed ; the raising of the banks to enable vessels of greater draught to pass through the Canal, which has been proceeded with as occasion required ; and the construction of a pair of guard gates at the head of the mountain range of locks at Thorold, the materials for which are now in course of preparation and delivery, and the foundation prepared for proceeding with the building as soon as the weather in Spring will permit. The exertions of the Contractor warrant the belief that these gates will be completed, and ready for use, by the opening of the navigation, thus securing the Canal against the recurrence of such a disaster as that which suspended the navigation for eight days in 1859.

REVENUE FOR 1860.

(Exclusive of Canal Tolls.)

The Annual Rental of the Water Power, and other property leased on this Canal, is \$9057.10.

The amount collected, in 1860, is - - - - - \$7,686.97

The arrears remaining due on the 1st January, 1860, amount to \$8547.14, for the collection of which stringent measures have been adopted.

The amount received on Land Sales is - - - - - 1,737.07

do for Fines and Damages - - - - - 2,116.10.

Total, exclusive of Canal Tolls - - - - - \$11,540.14

THE TRAFFIC.

In order to shew to what extent the traffic of the Canal has been affected by the operations of the Welland Railway, during the past year, the returns of the latter have been obtained, and are here contrasted with those of the Canal for the same period.

1. *The Welland Railway.*

<i>Destination.</i>	<i>Tons Up.</i>	<i>Tons Down.</i>
Through Freight to American Ports - - - - -	0	81,243
do to Canadian Ports - - - - -	0	4,761
		<hr/>
Total both ways - - - - -		Tons. 86,004
Local Freight both ways - - - - -		do 10,109
		<hr/>
Total movement in 1860 - - - - -		Tons. 96,113

The through freight on this Railway consisted altogether of grain.

The Railway conveyed 1485 tons of through freight, which it received at Port Colborne from 24 vessels, lightened to 10 feet draft of water, so as to pass through the Canal.

I received the cargos and parts of cargos of 230 vessels at Port Colborne, 150 of which were of such dimensions as admitted of their passing through the Canal.

2. The Welland Canal.

<i>Destination.</i>	<i>Tons Up.</i>	<i>Tons Down.</i>
From Canadian to Canadian Ports - - - - -	9,531	111,186
From Canadian to American Ports - - - - -	34,042	100,731
From American to Canadian Ports - - - - -	12,142	91,452
From American to American Ports - - - - -	122,081	462,919
Totals - - - - -	177,796	766,288
Total movement both ways - - - - -	Tons. 944,084	

The portion of this, consisting of grain alone, is as follows :

	<i>Up.</i>	<i>Down.</i>
Wheat - - - - - Tons.	6,071	268,334
Corn - - - - - do	3,110	136,129
Totals - - - - -	9,181	404,463
Total Wheat and Corn both ways - - - - -	Tons. 413,644	
If to this be added what passed over the Railway - - - - -	do 86,004	

The Total was - - - - - 499,648

Which shews that, of the total movement of freight between these Lakes, (1,040,197 Tons) the grain trade is about one-half, of which it is to be observed that the Railway has conveyed seventeen per cent. ;—while its proportion of the entire traffic is nine and one-third per cent. How much of this the Railway has actually added to the trade of this route, it is impossible to say; but, there is no doubt, from the facilities which it affords, that it has done so to a certain extent.

The number of vessels which passed through the Welland Canal:

	<i>In 1858.</i>	<i>In 1859.</i>	<i>In 1860.</i>
Upwards - - - - -	2,856	2,223	3,194
Downwards - - - - -	2,844	2,336	3,134
Totals - - - - -	5,700	4,559	6,328

TRACTION SERVICE.

Although it is quite possible to pass a vessel of 400 tons from Lake to Lake, with ease, in twenty-four hours, (there being only 28 Locks and 28 miles of Canal), the time ordinarily occupied is nearly twice as much; and, from various causes, vessels do not meet with that dispatch they should, nor secure the full advantage of the Canal which its unrivalled position and superior construction are so well calculated to afford.

The principal cause of this delay is found in the present system of towage¹ which is thought to admit of very considerable reform. The business is now open and free to any

one who can procure a team of six horses ; but, practically, it has fallen into the hands of about fifteen individuals, who employ, upon the whole, about one hundred and fifty teams, by which the vessels are towed through from Lake to Lake.

It is believed that the service could be more regularly, efficiently, and economically performed by placing tug steamers on the summit level between Allanburg and Port Colborne, a reach of sixteen miles, where, in case of head winds, it is extremely difficult for a team of six horses to tow a deeply laden vessel at all ; and by confining the towage by horses to the mountain range of locks between Allanburg and Port Dalhousie. By this arrangement it is thought that the time of each passage may be so much shortened as to admit of a vessel making one additional trip every season. But the parties at present engaged in towing have neither the means nor the enterprise to procure the tug steamers and make this improvement. It has been suggested that the Government might, without incurring any expense whatever or in any way increasing the present rate of towage, organize a more efficient traction service under the immediate direction of the Local Superintendent, by simply having the present rates collected along with, and the same as, canal tolls, and by giving a contract, or exclusive privilege for towing, for a term of years, to some competent and reliable party, who should be bound to have on hand at all times a sufficient number of tugs and teams to take vessels through from lake to lake without loss of time. This would, in fact, be applying to the Welland Canal the same principles as obtain in the maintenance of the tug service on the upper St. Lawrence, with the material exception, however, that in this case no bonus will be paid the contractor. It seems proper, too, that the Government, having expended so much money upon the construction of the Canal, should not leave the vessels navigating it to the imperfect arrangements of individuals, but should adopt the best means of having its advantages enjoyed to the fullest extent. It is supposed that the contractor would require nothing further than to be secured in the payment, at regular and stated periods, of the existing rates of towage, for such a length of time as would be sufficient to warrant his purchase or charter of the necessary outfit.

The Engineer and Superintendent of the Canal have, accordingly, been instructed to consider and arrange the basis of a Contract, for the performance of this service, and report thereon ;—upon the receipt of which, the subject will again be brought under Your Excellency's consideration, for further action.

THE SAINT LAWRENCE NAVIGATION.

THE WILLIAMSBURG CANALS.

These Canals were opened on the 21st April, and closed by frost on the 10th December; making 231 days of Navigation. They have been maintained in good order during the season, without interruption of the navigation, except for one day, on which the propeller "West" accidentally carried away one of the Gates of the Guard Lock at the "Galoppes."

Four pairs of new Gates have been supplied by contract, this year, for these Canals, and three pairs for the Beauharnois Canal, at a cost of \$11,998; but, owing to the unsafe condition of the old ones on the Williamsburg Canals, it was found indispensably necessary to put in six new pairs this season.

The Canal banks, at various points, have been further protected, during the past season, by stones forming a rip-rap wall at the waters edge, both inside and out, measuring, in all, about two miles in extent. It will be necessary to continue this kind of protection from year to year, until all parts of the banks are secured in like manner.

CORNWALL CANAL.

This Canal was opened on the 19th April, and maintained in good working order throughout the season, until it was closed by frost on the 10th December, thus making 232 days of uninterrupted navigation. Besides the ordinary repairs to the banks along the line, to make up for settlements, and the wearing away of the same from the passage of Steamers; four hundred cords of field stones have been employed, this year, in rip-rap for the protection of the river embankment past the Long Sault Rapids, where the current had been making inroads upon it; and also in facing with stones some 1500 yards in extent along the North bank, between the 18th and 19th locks, referred to in last year's Report.

The wharves at either entrance of this Canal remain in the same broken and decayed condition as reported last year, no repairs having yet been made upon them, from a desire to keep down expenditure.

The Superintendent reports that two pairs of spare gates are required for the safety of the navigation, in case of accident.

The repairs for 1860 cost	- - - - -	\$5,348.00
The management	- - - - -	8,226.39

Total	- - - - -	\$13,574.39
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BEAUHARNOIS CANAL.

This Canal was opened on the 19th April, and the navigation was uninterruptedly maintained in good order, for vessels drawing *nine* feet water, during the whole season, until it was closed by frost on the 3rd December, making 228 days. The gates of Lock No. 9, broken out in November, 1859, were repaired and replaced early in the season. Three new pairs of spare gates, built by contract, were delivered in October; but, as two pairs of these will be required to take the place of the old upper gates in Locks Nos. 8 and 10, on the opening of the navigation next spring, it is necessary, for the safety of the trade, to provide two additional pairs of spare gates for this Canal at an early date.

Two new ferry scows have been built for the long reach at the upper end of the Canal.

The storms of November last caused extensive damages to the Dyke on Grande Isle, above the main dam, as well as to portions of the same along Hungry Bay. The repairs to these must be made early in Spring. The Wharf and Breakwater at Grosse Pointe will also require repairs, before the opening of the navigation.

The cost of repairs for last year amounted to	- - - - -	\$3,314.82
Management	- - - - -	9,400.27
		12,715.09

The estimated cost of the repairs, for this year, is \$5,100.

The amount collected for fines and damages, by order of the Superintendent, in 1860, is \$138.96, (see Statement, Appendix D.)

The amount now due for Water Rents, is \$4,962.50; which will be dealt with under the proposed new system of collecting Water Rents, elsewhere alluded to.

LACHINE CANAL.

This Canal was opened on the 20th April, and closed on the 5th December, making 227 days of navigation. An interruption of 48 hours occurred this season, in consequence of a Barge coming in contact with the Swing Bridge at Wellington Street, in a severe gale, by which it was unshipped, and the passage of vessels delayed for that time.

The Canal has been kept in good repair during the season, but, owing to the inordinate draught of water for milling purposes at Montreal and Cote St. Paul, much difficulty has been experienced, especially during the period of low water, in keeping up the different levels to their proper heights. The Steam Dredge has been constantly employed in removing the deposit which, for many years past, has been gradually encroaching upon the proper draught of the Canal, and it will be necessary to continue its operation for two or three months more this season.

The tail race from the large waste-weir near Tate's Dry Dock, has received extension and thorough repair; the retaining wall below Lock No. 3, has been taken down and rebuilt; and the Lock Gates which were removed from Lock No. 2, have been substantially repaired; and there are now no less than three sets of Spare Gates on hand,—which is considered sufficient supply for any emergency.

New Works.

The enlargement of the Rock Cut, and other new works on this Canal, for which an appropriation was made last Session of Parliament, have not, as yet, been commenced. A Plan and Specification for the enlargement were duly prepared by the Chief Engineer of this Department, and the work, having been submitted to public competition, thirty-four tenders were received; but, in order to the successful accomplishment of this most desirable improvement, it was, after mature consideration, found indispensably necessary that the water should be drawn off the Canal for the winter; and, as this measure involved the stoppage, for the whole of that time, of all the mills and manufactories at Montreal and elsewhere along the line, depending upon the water supply, very strong remonstrances were made against it by these parties, as well as on the ground of the injury which would arise to the permanent structures they had erected, unless opportunity was given to them, to protect them beforehand; as on the ground of the loss and damage their business would sustain from its immediate and prolonged suspension, without adequate notice. It was, therefore, finally decided to postpone the work for another year. The work has been let to Messrs. Brown & Watson, experienced contractors, at Montreal, and will be proceeded with at the close of navigation this year, and prosecuted with such force as to insure its completion by the opening of navigation in 1862.

This postponement was not made, however, from any necessity of avoiding claims for damages, because in all the leases heretofore granted, the right of drawing off the water, to enlarge the Canal, and for other purposes, is specially reserved:—but, inasmuch as the interest of navigation is not seriously affected by the delay of another year in its accomplishment, nothing is lost to the public by shewing a reasonable consideration for the interests of the Lessees, who, by this delay, will be better able to guard their buildings against injury, and to manage, beforehand, that their business shall suffer as little as possible by its unavoidable suspension.

Advantage will be taken of this opportunity to construct the new Waste Weirs, and such other new works, at present authorized, as can be completed when the water is out of the Canal.

The Superintendent, in his Report, (Appendix D.) again refers to the necessity of completing the St. Gabriel Basin, and states that the trade in Wood, Lumber, and Square timber, is so rapidly increasing, that further accommodation should now be provided. He has, accordingly, been instructed to take measures for placing this work under Contract.

The facilities for elevating and storing grain and flour, have been largely increased during the past year; and still larger accommodation will be provided during the present year. These, it is supposed, will meet the more immediate wants of the Trade; but the quantity of produce now arriving at Montreal, by Rail and Canal, indicates the necessity of providing, at an early day, for far greater dock room and warehouse capacity than is at present, or is likely this year, to be afforded. By opening new Basins on the south side of the Canal, and deepening the channel through the middle of the large basin, up to them, sea-going vessels may, with facility, be brought in connection both with the Upper lake vessels, and the Grand Trunk Railway, for the draught upon the sills of the two lower locks has been made sixteen feet, expressly with this view and the requisite

quantity of land has long since been acquired, and is still retained for that express purpose. These basins might be proceeded with from time to time, according to the requirements of the Trade, and, it is believed that the requisite accommodation can be obtained, in this manner, in the readiest way, and at the very least amount of expenditure. Besides the advantage to the Trade, thereby afforded, it is to be considered that the sale of building-Lots, around these basins, for the erection of warehouses, would, alone, in the course of a few years, more than repay the cost of their construction.

It is unnecessary to dwell upon the importance to the trade of the St. Lawrence, of having proper facilities for receiving, storing, and transshipping grain and other produce, or to recount the inconvenience and loss it has sustained during the past season for want of them—the mere fact that the Railway, although it reaches the city, which is the head of Ocean navigation, possesses none of these facilities, and is, as yet, unconnected with the Harbour, is sufficient, of itself, to make manifest that a radical defect in the traffic arrangements remains to be remedied, and a great want to be supplied.

The cost of the Repairs, for the past year, for the reasons before stated,	
is unusually large, and amounts to	\$17,839.47
The cost of Management	10,755.57
<hr/>	
Total	\$28,095.04

The estimated cost for repairs on this Canal, for 1861, is \$9,519.

The amount collected in 1860, for fines and damages, by order of the Superintendent, is \$224.50. (See Statement, Appendix D.)

CHAMBLY CANAL.

This Canal was opened on the 22nd April, and closed on the 2nd December, giving 225 days of navigation; which, however, was interrupted for one week, between the 27th April and the 4th May, by a break which carried away thirty feet of the Canal bank.

Sundry repairs have been made during the past season to different works along the line—to the Locks, the Bridges, Wharves and Culverts—one Culvert has been entirely rebuilt. The pier head at St. John's raised and gravelled to augment the head of water in the upper reach, and several bars removed from the bottom of the Canal, whereby the draught has been considerably increased; and, altogether, the Canal is now in fair working order; but it will still be necessary to employ the Steam Dredge during the greater part of this season's navigation, in the removal of the deposit, which has accumulated in the angle at the foot of the slopes to such an extent, that the large flat bottomed barges taking this route frequently ground upon it, and obstruct the passage of other vessels.

It is satisfactory to observe a further increase this year, in the traffic, over former years. The receipts for tolls for the last three years being as follows:

1858	- - - - -	\$11,263 32
1859	- - - - -	16,019 32
1860	- - - - -	18,442 16

The amount collected for fines and damages during the past season is \$82.66, a statement of which is given in the Superintendent's Report, (Appendix D.)

The repairs last year cost	- - - - -	\$10,041 56
Management	- - - - -	5,956 25
		<hr/>
		\$15,997 82

The repairs for this year are estimated to cost \$4,467.50.

ST. OURS' LOCK AND DAM.

The navigation commenced here on the 4th April, and was closed on the 5th December, during which period of 246 days the trade was uninterrupted, except for a few hours, by changing the old Lock Gates for new ones. The Lock is now in good working order.

In the protection of the Dam during the past season, it has been found necessary to employ 277 Toises of stone, and it is estimated that nearly the same quantity will be required this year, to repair the damage caused by floods, and to preserve it in a safe condition.

The Repairs last year amounted to	- - - - -	\$3,601 63
Management	- - - - -	1,267 95
		<hr/>
Total	- - - - -	\$4,869 58

The probable cost of repairs to the Lock and Dam, this year, is estimated at \$2,770.

ST. ANN'S LOCK AND DAM.

The navigation was opened here on the 21st April, and was continued, without interruption, until the 2nd December, a period of 226 days, during which time 3,695 vessels were passed through the Lock, shewing an increase of 440 vessels over 1859.

A house has been erected, during the past year, with suitable office accommodation for the Lock Master and Collector.

The superstructure of the South Pier at the lower entrance, as well as 70 feet of the Dock at the Mill Race have been rebuilt, and the bridge over the same reconstructed. The ice-breaker at the upper end of the Pier or Dam was entirely destroyed by the floating ice last spring. This has been rebuilt in a substantial manner, and several decayed portions of the Pier have, likewise, been renewed. Some further repairs to the Pier works about this Lock will be required during the present year, and it will also be necessary to take out the old gates at the upper end, and put in new ones, before the opening of navigation.

It is intended to change the mode of working these gates, in spring, by substituting wheels for capstans, thereby saving the labor of two men during the season of navigation, equal to \$420 per annum.

The estimated cost of these repairs and alterations is \$1,640.

The cost of repairs, in 1860, amounted to - - - - -	\$815 87
Management - - - - -	984 58
	<hr/>
Total - - - - -	\$1,750 45

GRENVILLE AND CARILLON CANALS.

These Canals were opened on the 30th April, and closed on the 29th November, during which period of 214 days, the Canal was preserved in good working order, and the navigation maintained, without accident or interruption.

The north wall of the first Lock at Carillon, referred to in last year's Report, was taken down and rebuilt before the opening of the navigation. During the winter the other Locks were repaired. In April the feeder was cleared out, and a large amount of excavation done in removing bars from the bottom of the Canals.

The repairs, during the season of navigation, were restricted to the least possible for the safety of the works, and consisted, principally, in raising the North River Dam, raising the Canal banks, repairing fences, and dredging the Channel at the upper entrance of the Grenville Canal.

It is remarked by the Superintendent, that, notwithstanding these general repairs, the mechanical structures are old, and partially decayed, and that these repairs afford only temporary relief, and encourage the hope that they may be maintained for another year at a moderate expenditure, which he estimates at \$2,394; but, in order to obviate the difficulties hitherto experienced on the Grenville Canal, from the narrowness of the Channel, and the filling up of the Canal above the Guard Lock, he submits a further estimate of \$500, for making passing places, and \$1,200 more for a Pier at the upper entrance, making, in all, \$4,094, to be expended this year in repairs and improvements upon these Canals.

The Repairs in 1860, amounted to, - - - - -	\$6,398.51
Management, - - - - -	8,693.65
	<hr/>
Total - - - - -	\$10,092.16

RIDEAU CANAL.

This Canal was opened on the first of May, and the navigation was maintained, without accident, or interruption, until the 28th November, 212 days, when it was closed by frost.

The Superintendent represents the condition of the Works, on this line of navigation, to be such as to call for a further expenditure, this year, of \$7,270, to preserve them in working order. Still, he thinks they are gradually getting into a much better condition, and that, by making all repairs of a durable character, whenever practicable, it is to be

ped that the working of this Canal, in future, will be as little impeded as it has been during the past year, and that the expenses may be gradually diminished.

The Repairs, during the past season, have amounted to \$10,550.31 ; but, of this, the sum of \$5,474.40 has been expended upon New Works and improvements of a more durable character.

The Newboro' Bridge has been rebuilt,—at a cost of \$1,758.62. In its reconstruction, the bridging has been reduced one hundred feet,—half its former length,—by making so much of it a solid embankment, and thereby reducing the cost of future maintenance. This Bridge is about to be handed over to the Local Municipality. The upper mitre sill of the Lock at Black Rapids has been rebuilt, together with a portion of the paved floor above it, and other repairs effected, at an expense of \$1,410.58.

At Lower Brewer's, a portion of the Lock wall was taken down and rebuilt, and the lower mitre sill and Lock gates repaired, at a cost of \$2,305.20.

The total cost of repairs, management, and new works, for the year 1860, amount
to - - - - - \$27,786.30

From which deduct the cost of new works and permanent improvements. 5,474.40

Leaving the cost of ordinary repairs and management, - - - - - \$22,311.90

The cost in 1859, was . - - - - - 26,898.79

Shewing a reduction of - - - - - \$4,586.89

With regard to the Traffic, there does not appear to be any marked increase, except in the article of Fire-wood. The tonnage of vessels passing through the Canal in 1860, was 111,400 against 171,508 of the previous year ; and it is estimated that, if tolls had been collected according to the tariff, the revenue would have been about \$11,212.

Between Smith's Falls and Ottawa, a distance of sixty-two miles, this Canal traverses a rich agricultural country, and a considerable portion of the supplies for that city will be furnished from this section of the country, as its increasing requirements may demand.

Allusion was made, in the Report of last year, to the question of leasing the surplus water of this Canal, heretofore unemployed, for milling and manufacturing purposes ;—and, also, to the fact that a survey had been ordered, and a plan was to be matured, by which this waterpower, with land appropriate for its use, would be disposed of by public competition. Since then, the Survey has been completed, and a plan submitted, conjointly, by Mr. Merrill and the Superintendent of the Canal, which, after having been carefully examined by the Deputy Commissioner on his tour of inspection, has, finally, been approved and adopted by this Department.

In accordance with this plan, Leases of the water privileges at Hogsback, Edmond's, Chaffey's, and Lower Brewer's have been advertised for sale, by public auction, to be held at Ottawa on the 15th April next. Leases for the remaining privileges at Black's Rapid's, Howes', Davis's, Smith's Falls, and Jones' Falls, will, likewise, be offered for sale, so soon as there may appear to be a reasonable demand for them.

The undersigned feels justified in again expressing the hope, held out in last year's Report, that, in the course of a few years, this work may be made self-sustaining.

BURLINGTON BAY CANAL.

The reconstruction of the outer portion of the South Pier of this Canal, is reported to have been completed, by the Contractor, in a satisfactory manner. The expenditure upon it has been \$12,046.55. The remaining part of it is represented to be in a very decayed and ruinous condition, and the cost of rebuilding it is estimated at \$12,000. By the expenditure of this sum, the Canal will be placed in good order; and, in all probability, no further outlay will be necessary for a considerable length of time. The balance of the appropriation, yet unexpended, is sufficient to meet the proposed outlay; and, under the authority of Council, the Superintendent has been instructed to proceed with the work.

INLAND NAVIGATION—NEWCASTLE DISTRICT.

The expenditure, during the past year, upon the several Public Works in the Counties of Victoria and Peterboro', situated at Lindsay, Bobcaygeon, and Buckhorn, has been limited to such repairs as were essential to the preservation or completion of the really useful works on this line of navigation, and to these only; it being considered inexpedient to expend the public money upon such as appeared to be of no practical advantage to the country. For this reason, no expenditure has taken place at the Lindsay Lock, either in its repair or reconstruction. The condition of these works, at present, is as follows:

At Lindsay,

The Dam is in a good state of repair, but the Lock, which was built of wood, is so far gone to decay, and the Gates so unmanageable, as to be entirely unfit for use. The Bridge across this Lock is also in such bad order as to be no longer of any use as a Swing Bridge, and is now supported, in the middle, by bents resting on the bottom of the Lock. With the exception of the Dam at the Station, by which the water is maintained at its proper level in Lake Scugog, and the Mills supplied with water, the works are in such a decayed and ruinous condition, as to be no longer serviceable, and the navigation here has come to a final close.

At Bobcaygeon,

The repairs and works recommended by the Chief Engineer, in his last year's Report, have been successfully carried out. They consist of a rack across the tail-race of the Saw Mill, and a boom at the outlet, the widening of the channel, and the clearing out of sunken timber; clearing out the Lock Chamber; repairing the Gates; raising and improving the Swing Bridge; and reconstructing the slide of Upper Dams. The General Rules and Regulations for the Provincial Canals have also been applied to these improvements, together with the special Regulations suggested by the Chief Engineer for this particular one; and it is to be hoped that, by means of these, there will be no difficulty, in future, in ensuring order and regularity in the use of them, and preventing their obstruction by the milling operations of persons drawing their supply of water from this Canal.

At Buckhorn,

The Dam has been staunch, as recommended by the Chief Engineer, and is now reported to be in a good state of repair.

As regards the manner in which these isolated works have fulfilled the intention of their projectors, in forming a line of Inland navigation, for opening up and developing the resources of the interior country, it is proper to remark, that, whatever might have been their expectations from them, or however reasonable they may have been at the time, there is now no longer any doubt, that the construction of Railways, penetrating the back country at right angles to the Grand Trunk, and the line of water communication by Lake Ontario, has materially neutralized their effect, and rendered one of them, at least, namely, the Lindsay Lock -all but useless, even if restored to proper working condition. The trade of the interior being directed entirely towards the front, and that between inland stations being small, or of no amount, it is readily seen why the same thing has taken place here, as in other countries, where superior facilities of internal communication have been introduced. The Port Hope and Lindsay Railway, running 43 miles into the interior, and touching this line of navigation nearly at its most northerly and distant limit, has diverted the course of trade to such an extent, as to cause Lake Scugog and the portion of it south-west from Lindsay to be entirely abandoned by the only steamer, which, up to this time, has run upon this Lake.

These inland waters have now three points of connection with the front :—(1.) At Port Perry, at the South end of Lake Scugog, where a good, improved road, nineteen miles in length, connects with the Grand Trunk and Lake Ontario at Whitby. (2.) At Lindsay with Port Hope, by the Port Hope and Lindsay Railway. (3) At Chemung Lake by common road six miles, and by rail three miles, to Peterboro', and thence by rail to Port Hope and Cobourg.

Under these altered circumstances, nothing passes Lindsay Lock, except timber, which would be much better accommodated by a Slide, than by a Lock. The steamer now connects the Railway Station at Lindsay, which is situated below the Lock, with all accessible points on these inland waters, north and east from that station, and it appears that, for all purposes of steamboat navigation, the Lindsay Lock is, in reality, no longer required. The utmost that seems to be necessary here, is to convert the Lock into a Slide, and to substitute a new fixed Bridge across it for the present old and useless Swing Bridge. This can be accomplished at a trifling outlay, by using the materials now on hand for this purpose, whereas the reconstruction of the Lock according to the former plans, with the view of completing the navigation for steamers, would, according to the Engineer's estimate, cost upwards of \$60,000.

As there is actually no trade passing this Lock, to warrant such an expenditure, it is proper that the outlay should be limited to what is really of use; and, the Railway having taken all but the timber, the works should now be adapted to the latter.

In reference to the Slides and Dams on the Trent, the Superintendent reports that they were put in a state of thorough repair last fall, and are ready for the passing of timber in spring.

As no use is made of the Lock at Whitla's, or of the Lock and Canal at Chisholm's Rapids, there has been no expenditure upon them during the past year. The Lock at Crook's Rapids is seldom used. The gravelling of the Dam at this place, for which ten-

ders were received, has not yet been performed, in consequence of the failure of the party whose tender was accepted, to proceed with the works when called upon to do so.

The amount expended upon these several works, in 1860, was	- - -	\$2,825.55
The cost of superintendence, &c.	- - - - -	818.50
Total.	- - - - -	\$3,139.05

TUG SERVICE, UPPER ST. LAWRENCE.

The tug service, between Lachine and Kingston, was performed, last year, by the Contractors, Messrs. Calvin and Breck, in the same efficient and satisfactory manner as reported in former years ; this is evidenced by the absence of all complaints, and the concurrent recommendation of the Inland Marine Insurance Agents of Montreal, for the renewal of their contract, which expired at the close of navigation.

The following statement exhibits the number of towages, on each division, for the last three years.

DIVISIONS.	Towages in 1858.		Towages in 1859.		Towages in 1860.	
	No.	Amount.	No.	Amount.	No.	Amount.
		\$ cts.		\$ cts.		\$ cts.
Lachine to Beauharnois	1,253	8,679 52	1,262	7,807 34	1,394	9,582 03
Beauharnois to Cornwall.....	841	12,214 32	615	8,671 08	1,025	14,182 72
Dickinson's Landing to Kingston.....	917	23,321 27	573	15,943 15	994	27,073 12
Totals	3,011	44,215 11	2,450	32,421 57	3,413	50,837 87

Shewing an increase, in the number of vessels, towed in 1860, of 40 per cent over 1859, and 13 per cent over 1858.

In view of this state of the trade, it was considered inexpedient to bring this service to an abrupt termination. Seven powerful steamers have been engaged therein, and some of them had to remain in readiness, often unemployed for days, in the various reaches of the River, comprised within the limits of the contract. It is extremely doubtful whether the wants of the trade can be properly supplied, without imposing on parties the obligation of having steamers at all times in readiness ; and this, of course, cannot be done without a contract ;—but, looking at the large returns, in the way of towages, it was thought that the service might be undertaken for a less Bonus than the Contract which has just expired. It is believed that, eventually, with due notice to the Trade, the service might be left to private enterprise, but, in the meantime, it was considered advisable to continue it for at least one or two years, and no longer ; and that notice be given that it will not be performed after that time. It was, therefore, intended to offer the future service to public tender ; but, considering that the previous Contractors had performed the service for a period of six years without an accident, of any consequence, to either vessel or cargo

in tow of their steamers ;—had, by their perseverance and attention, mastered the difficulties of the route ;—and had provided themselves with steamers, which were commanded by captains well qualified for their post by long experience and knowledge of the River :—it was, after full communication with them, finally agreed to prolong their contract for a period of two years, at an annual bonus of five thousand pounds ; terminable, however, on certain conditions, at the end of the first year, if deemed expedient by the Government. By this arrangement the annual bonus is reduced one thousand pounds.

OTTAWA WORKS.

The several Public Works, constructed upon the Ottawa, and its tributaries, for facilitating the descent of Lumber, were carefully examined by the Superintendent in charge, late last fall ; who reports them to be, for the most part, in good working order ; requiring only ordinary repairs to place them in safe and proper condition for the business next spring. These repairs, detailed in a statement in his Report, hereunto annexed, (Appendix F.) and estimated to cost \$3,616.54, are now in progress, and will be completed before the opening of the navigation.

The repairs, for 1860, amounted to \$4,355.94. The new works, constructed in 1860, consist, (1) of a retaining boom at the Chenaux Rapids, referred to in the Report of last year, which cost \$4,488.71 ; and, (2) the extension of the Dam at the head of the Chaudière Slides, 1,300 feet in length, and costing \$3,931.56. This Dam serves to increase the supply of water to the Mills, and, with the Boom above referred to, affords additional facilities, and greater security, to the operations of the parties engaged in the manufacture of lumber, at this station.

THE SAGUENAY WORKS.

These works were completed only last year. They withstood the pressure of the spring floods, and passed all the saw-logs without receiving any damage. A local superintendent, Mr. D. Boulanger, has been appointed to take charge of them, at a salary of Four hundred dollars a year, with the privilege of employing assistance during the running season. On the 8th August last, the saw mill at the Little Discharge of the Saguenay was struck by lightning, and the flames, communicating with the slide, one hundred feet of it was more or less damaged, before they could be extinguished. The repairs have been effected, and the works are now reported to be in good order for the spring business.

The total cost of these works, up to 1st January, 1861, is - - - - \$40,865.07

The cost of management and repairs in 1860, was - - - - - 545.96

ST. MAURICE WORKS.

Notwithstanding the unprecedented flood of last Spring, which raised the water to a height of 28 feet at the head of the Shawanegan, threatening the total destruction of the works, and causing considerable additional expense ; no accident has occurred, and the

several improvements on this River have operated successfully, and are now in good working order.

<i>The Cost in</i>	1859.	1860.
For Maintenance, was, - - - - -	\$7,234.54	\$7,822.58
For Repairs, - - - - -	543.21	887.91
The Revenue from Tolls, - - - - -	2,121.81	3,079.56
The indirect Revenue from the Crown Dues on Timber and Timber Limits, are not, of course, taken into account.		

By the improvements which will be made during this winter, a very considerable reduction is anticipated in the cost of maintainance; while their effect will tend, materially, to lessen the cost of bringing the lumber to market. These improvements, petitioned for by the Lumbermen, and recommended by the Superintendents, both of the Ottawa and St. Maurice Works, consist of certain works at La Tuque, Little Piles and Grande Mère, which will remove the difficulties of running timber past those stations; and of the construction of a retaining boom at the head of the Shawanegan. By this change, the establishments of the Upper St. Maurice may be withdrawn, and Shawanegan then becomes the most remote station on the River.

ROADS.

PORTAGE DU FORT ROAD.

This road was completed, and taken off the Contractor's hands during the last season. To provide for its future maintenance, it was, in accordance with the provisions of the Act 22 Victoria, chap. 28, of the Consolidated Statutes of Canada, advertised to be sold to parties competent to purchase and hold it, on the 1st day of November last; but, at the request of the Municipality of Litchfield, which desired more time to discuss the question of its purchase, the sale was twice postponed, and is now finally arranged to take place on the 1st day of April next.

ROADS BELOW QUEBEC.

The several roads, situated on the North and South Shores of the St. Lawrence, below Quebec, now in course of construction under this Department, and intended to connect

remote settlements,—to bring the public lands into the market—to establish Mail routes, promote colonization, and form a communication with the sister Province of New Brunswick, have, during the past season been visited and examined by a confidential Engineer, (whose report, Appendix H, is hereunto annexed.) Under his instructions from this Department, he was fully authorized to enquire into all matters connected with the Location, Construction, and Management of these roads; and to give such instructions, on the spot, to the Local Superintendents, on all these points, as, in his judgment, the public interest might seem to demand. This duty he has performed in a very judicious and satisfactory manner. His labors have served materially to improve the character and efficiency of the works; to produce uniformity; correct errors or abuses;—and to regulate the expenditure upon the different routes in strict accordance with their actual requirements. His Report, besides shewing what parts are finished or unfinished, and the expenditure present or prospective, will be found to contain that kind of information, in reference to their character, which will be most anxiously looked for by those who are interested in the trade of these Districts, or who may be desirous of acquiring lands and becoming settlers in this part of the Province.

SOUTH SHORE—THE TEMISCOUATA ROAD.

The most important of these lines is the Temiscouata Road, 66½ miles in length, connecting the St. Lawrence with New Brunswick and the State of Maine; and forming the mail route, by land, between the two Provinces. It is now completed, all but ten miles. As a Provincial thoroughfare, it is constructed, so far, in a style equal to any of the other Roads. It is cleared for a width of 66 feet, and the roadway formed 22 feet in breadth, between the side ditches; and, in passing over the hills, none of the grades are allowed to exceed an inclination of one in fourteen.

The works on this Road have been prosecuted with great activity, throughout the past season, under the efficient superintendence of Mr. Joseph Rosa. He has, in 1860, completed 15½ miles; grubbed and cleared 3½ miles; and cleared and partly grubbed 1½ miles, besides constructing 8 small and 5 large wooden bridges. The road is so far advanced that the whole of the winter traffic now passes over it for 48 miles continuously, from Rivière du Loup; although, in this distance, there are 3½ miles of the line which are only grubbed and cleared, and which will cost about \$5,000 to finish.

The expenditure, on these works, in 1860, has been \$32,568.65

The amount required, to complete the remaining ten miles, is estimated to be \$18,000; and it is confidently anticipated that this great thoroughfare will be open throughout, for traffic, early in the coming summer.

THE METAPEDIA ROAD.

This Road also forms a connection between the St. Lawrence and New Brunswick, and is next in importance to the Temiscouata, although it exceeds it in length.

It takes its departure from the St. Lawrence at St. Flavien, 200 miles below Quebec;

following the course of the Metapedia, and nearly that of Major Robinson's projected line for the Quebec and Halifax Railway, and connecting with the Bay of Chaleurs and the North-east part of New Brunswick. It is 98½ miles in length. When completed, it will entirely supersede the old Kempt Road, which passes over a succession of mountains, and can be travelled, in winter, only by dog-sledges or on snow-shoes. The new line is comparatively level or undulating, no grade exceeding *one in ten*, and is destined to become the main highway to the District of Gaspé, and will afford to the settlers along the Bay of Chaleurs access, in winter as well as in summer, to the markets of the Upper St. Lawrence, with which they now have most imperfect connection in summer, and none whatever in winter.

It is reported that the lands along this line are, generally, of excellent quality; and that, since the Township of Metapedia has been surveyed, and in anticipation of the completion of this highway, the lands are being rapidly settled.

The appropriations heretofore made for this work have been too limited in amount to enable this Department to prosecute it with a force adequate to its importance. With sufficient means, it might be completed in a short time; but, while the progress has to be regulated year by year, so that the appropriations may not be exceeded, the cost of superintendence is unduly enhanced, and becomes a large per centage on the outlay. The road can be finished, with much greater economy, by having adequate means supplied to prosecute it, at once, to completion, and the benefits to be derived from it much sooner experienced.

The estimated cost of the whole line is given, by Mr. Baillargé, as follows:—

The <i>Northern Division</i> , 33½ miles in length, from the St. Lawrence to Lake Metapedia, begun in 1857, and continued, under the superintendence of Mr. J. B. Lamontagne	\$30,000
The <i>Central Division</i> , 27 miles in length, from the Lake to Noble's, at the confluence of the Rivers Causupscal and Metapedia, not yet commenced	8,400
The <i>Southern Division</i> , 38 miles in length, from Noble's to the mouth of the Metapedia, and thence, along the Ristigouche, five miles to James Sillar's. Commenced in 1859, and continued, under the superintendence of Mr. Jean Lefebvre	56,065
Probable total cost of 98½ miles	\$94,465
The total amount of appropriations	32,000

Balance required to complete	\$62,465
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About 13 miles of the *Northern Division* are now open, including five miles through the old settlements near the St. Lawrence; the total expenditure on which, up to the end of 1860, has been \$8,606.98. The amount expended in 1860 was \$6,131.32. About 11 miles of the *Southern Division* are completed, and the total outlay, up to the end of 1860 has been \$20,871.84. The amount expended in 1860 was \$4,371.84. The balance of appropriations (North and South) on hand, on the 1st January, 1861, was \$2,521.18.

THE MATANNE AND CAP CHATTE ROAD.

This Road is a continuation of the main Provincial Highway along the Gulf Shore, extending from the 9th Lot in the Township of St. Denis, 9 miles below Matanne, to the Chapel of Cap Chatte, 285 miles below Quebec; and is a little more than 36 miles in length. It is open to the public throughout, but is so imperfectly finished, that the inhabitants at its eastern extremity are still seriously inconvenienced by the want of a proper means of communication with the rest of the Province.

The improvements on this line were begun in 1857, under the superintendence of Mr A. Fraser, and the appropriation becoming exhausted, they were suspended in December, 1859.

The expenditure incurred upon this Road, up to this time, has been \$19,672.14; and, according to Mr. Baillargé's estimate, it will require about \$2,241.50 still to render it available.

GASPÉ AND ST. LAWRENCE ROAD.

ANTOINE PAINCHAUD, *Superintendent*.

This Road consists of three divisions, all now in progress of construction; which form part of the last connecting link between the Mail Route by the Bay of Chaleurs, and that along the South coast of the St. Lawrence.

First Division.—From Peninsula, or Watering Brook, to Grande Grève, along the North Shore of the Gaspé Bay, a distance of 10 miles, completed this year.

Second Division.—From the intersection of Peninsula Road to Griffin's Cove; i. e., from Gaspé Bay to the St. Lawrence, a distance of $7\frac{1}{2}$ miles. In progress and equal to $4\frac{1}{2}$ miles completed.

Third Division.—From Griffin's Cove to Great Fox River, along the South Shore of the St. Lawrence, a distance of 6 miles:—In progress, and one mile completed.

Altogether, on these $23\frac{1}{2}$ miles of road, $15\frac{1}{2}$ miles have been completed under the Superintendent of this Department, and $2\frac{1}{2}$ miles are in course of construction under the Agent, for this expenditure, of the Colonization Fund. The amount expended, under this Department, during the last year was \$5,893.16; and, altogether, from the commencement of the road to the close of last year, there has been expended on these divisions, \$9,182.41. The appropriations amounted to \$10,000. and it will require a further sum of \$2,630. to complete the works now in hand.

NORTH SHORE.

Malbaie and Grande Baie Road.

This road was commenced in 1856. The works were suspended in 1859, and resumed in 1860. They are now being carried on by day's labour under Mr. Paschal Bouchard, Superintendent, and $8\frac{1}{2}$ miles of new road made during the past year.

The total length of this Road, from the St. Lawrence to the Saguenay, is computed to be 76 miles ; of which 10½ miles at the South end were made by the inhabitants, and 6½ miles are undertaken by the Government. The appropriations for it amount to \$8,000. The expenditure, up to this time, has been \$7,851.41 ; which has chiefly been confined to the 46½ miles from the first concession of Grande Baie southward, this portion being the best adapted for settlement. In this distance

2½ miles next Grande Baie, are ditched, graded and turnpiked, for a width of	-	18 feet
36½ partly grubbed and levelled, (not drained,)	- - - - -	12 "
1 side logging burnt, to be rebuilt,	- - - - -	12 "
7 opened for sleighs in winter,	- - - - -	8 "

46½ miles, in all, with 47 Bridges.

The remainder of the route, 16½ miles, towards Malbaie, is only a winter road, 8 feet in width, for the most part opened by the inhabitants, over very unfavorable ground, but some of the steepest hills can be avoided. The same may be said of the 2½ miles at the north end of the line as far as the Grande Baie Church. In its present state this road is passable, throughout, for sleighs in winter, but, as yet, impracticable for carts in summer. To finish it in the same manner in which it is, so far, constructed, will cost, according to Mr. Baillarge's estimate,

Mr. Baillarge's estimate,	- - - - -	\$8,667.75
The cost to this time has been	- - - - -	7,851.41

Making the total cost of 65½ miles, \$16,519.16 when completed, on an average of \$252 per mile.

It is to be remarked that the first 14 miles from Malbaie, and the last 21 miles from Grande Baie, are reported to be, more or less, fit for settlement; and are already settled to a considerable extent; but the intervening portion, with slight exceptions, can never be brought under cultivation.

It is observed by Mr. Baillargé, that, at a distance of 31 miles southward from Grande Baie, a mail route is now being opened across a fertile tract of land, about 1½ miles in length, to the Village of L'Anse St. Jean, on the west bank of the Saguenay, where there is a very thriving settlement which owes its development chiefly to the construction of the Malbaie and Grande Baie Road.

SURVEYS---PROJECTED ROADS.

The recent establishment of the Free Port of Gaspé, having turned the attention of intending settlers to the Public Lands, available for settlement, within this District, it would seem expedient, for the purpose of promoting the sale and cultivation of those lands, that roads should be opened through them; and that, as a Provincial Highway, there should be a continuous road along the River and Gulf of the St. Lawrence, to the extreme point of Gaspé.

It is not generally known that, long as some parts of this coast have been settled, there is, to this day, no road whatever for a distance of one hundred miles along this shore, namely, from Cap Chatte to Fox River. In this distance there are about a dozen fishing stations, the inhabitants of which have no communication with each other, except by water; and from the information that has been received, it would appear that no road can be constructed along the water's edge, on account of the bold, perpendicular headlands jutting out into the sea, leaving no margin whereon to form one, and their sides being too steep and precipitous to admit of making a road along them.

As the natural difficulties in the way of constructing a road along the shore, to connect these isolated settlements, would thus appear to be insurmountable, it remains to be seen what kind of a line can be obtained, back upon the first terrace or table land, along the River and Gulf, taking the best possible advantage of crossing the streams flowing into them, to save bridging and descending into deep ravines. And as such a line must pass through the unsurveyed lands pertaining to the Crown, the survey of it will furnish much valuable information in reference to the character of the soil and its capabilities for cultivation, which will be of great service to the Crown Lands Department, in laying off Townships for settlement. In this view of the case, it was deemed expedient that the survey should be made under the joint direction of the Crown Lands and Public Works Departments; and, accordingly, Mr. Baillargé has been appointed to conduct it, under instructions from each Department, which he received on the 10th January last. He has been directed to form two surveying parties, and to commence his examinations at both ends of the line, with the view of having the survey completed during this winter. The following principles are laid down for his guidance, in making choice of a line:—

- 1 It is considered of the first importance to select the best engineering line for a common highway, between Cap Chatte and the mouth of Fox River, that the nature of the soil and the formation of the country will permit, that is to say—the line that shall be most favorable for grades, and for facility of construction.

- 2 It is considered of almost equal importance, that this line should run as near to the

existing settlements, for their accommodation, as practicable, preserving, at the same time, its character according to the first condition; and that these settlements be accommodated by branch roads from the main line, which, for purposes of present and future use, should be as short as possible.

3. These two conditions fulfilled, the road should be run through as great an extent of Crown Lands as may be found practicable.

He is further instructed to furnish a Map and description of the country through which the located line will pass, shewing the topographical features and the character of the soil and timber in its vicinity, with an estimate of its probable cost, and all such information as may be necessary to proceed with the work, in the event of the same being authorised.

Should this Road be proceeded with, it seems advisable that, at the same time, it should be extended onwards from Griffin's Cove, (to which point it is now in progress from Fox River,) to Cap Rosier Light House, and thence across the point of Gaspé, to Seal Rock and Grande Grève, which would add 14 miles to its length, and complete the connection between the settlements and that important Light, and place this the extreme eastern point of Canada in communication with the rest of the Province.

HARBOUR OF REFUGE—LAKE HURON.

The East coast of Lake Huron, for a distance of 200 miles from Port Sarnia to Cape Hurd, affords no shelter for vessels navigating this Lake in stress of weather.

The very superior Light Houses recently constructed on this coast, at Port Clarke, Chantry Island, and the Isle of Coves, on the Dioptric principle of Fresnel, are found to be of great benefit to this navigation; and the aid granted to such local improvements as the Harbours and Piers at Penetangore, Inverhuron, Port Elgin, and Southampton, has likewise been of great service to the local trade; but as shipping increases, a safe Harbour of Refuge is more and more called for. It becomes essential to the protection of life and property, the reduction of the rates of insurance, and to the proper development of the commerce of this Lake.

This question formed the subject of Parliamentary enquiry during the last Session, which resulted in the report of a Committee recommending Goderich as the most desirable place to be selected as the Harbour of Refuge; but no further action was taken.

It is reasonable to suppose that the construction of such an important harbour will necessarily involve a large outlay, and for that reason it would seem to be advisable, before incurring any expenditure, or committing the Government to any particular place, and the consequences that might arise from a too hasty or injudicious selection, that a thorough examination of all the more eligible places along this coast should be made, under this Department, and that plans and estimates for improving the same should be prepared. With this information before the Government, it is believed that there will be no great difficulty in making choice of a situation, where the public money can be applied with the best effect for producing the desired result. The Chief Engineer of the Department has been instructed to undertake the duty of making a thorough survey and examination at the *earliest possible period*.

 ABOVE LACHINE.

Three new Light Houses have been built and lighted up, during the past season, on the route between Lachine and Ottawa; two of which are situated at Pointe Claire, and the third at Green Shoal.

The other forty-six Light Houses upon the Inland Lakes and River St. Lawrence, above Lachine, are now in a state of good repair; with the addition of several new Works, mentioned in last year's Report. These consist of dwellings, erected for the keepers of Lights at Grosse Pointe, Lindoe Island, and Coles Shoal:—fencing in the ground at Clark Light, Lake Huron;—building a crib on the Spectacle Shoal, and moving the Light House to it; a new crib and beacon erected between Lancaster and Coteau, Lake St. Francis; and a new pier at Point Peter, Long Point, Lake Ontario, for the protection of the Light House. The Light House supplies having been procured upon tender, were delivered, at the different stations, by the same contractor as that for the previous year, and upon the same terms. This service was regular and satisfactorily performed, and at very moderate expense, compared with former years.

The Light Houses have, hitherto, been supplied with the best sperm-oil, the demand for which, so far exceeds the production, that the price is continually increasing. With a view of introducing a cheaper kind of oil, experiments have been made, during the past season, upon the comparative economy and efficiency of some of the better qualities of coal-oil. These are found to possess equal, if not superior illuminating qualities—do not burn so fast as sperm, and their cost is little more than one half of that of the latter. Encouraged by these results, it has been decided to supply the more accessible Light Houses with coal-oil, and the burners of these are, accordingly, undergoing the change necessary

NEW LIGHT HOUSES BELOW QUEBEC.

A Light House has been erected at Father Point, the most eastward Telegraph station on the St. Lawrence, below Quebec; and furnished with a signal gun, at a cost, (including the gun,) of \$1,453.61. It was lighted up early in the season.

For the erection of the five new Light Houses, provided for by vote of last Session, to mark the navigable channel of the River, below Quebec; namely, at Brandy Pots, Long Pilgrim Island, Grande Isle de Kamouraska, Bellechasse Island, and Crane Island; nineteen tenders were received, on the 14th July last, and the most eligible being that of Louis Dery, Builder, of Quebec, a contract has been entered into with him, for the construction of the whole number. The materials are being prepared, during the winter; the Lanterns and Lighting apparatus are ordered from England, and, it is expected that they will be complete and brought into use by the first of September next.

PUBLIC BUILDINGS---OTTAWA.

The Contractors for the Parliamentary and Departmental Buildings, having made all necessary arrangements in the fall of 1859, as far at least as the lateness of the season when the contracts were signed would permit, proceeded steadily during the whole of the following winter with the excavation of the several buildings: opened their quarries, and delivered large quantities of stone, sand, lime, and other materials for the works. The masonry was commenced as early as possible in the spring of 1860. The first stone was laid on the 2nd April, and from that time to the close of November last, the building operations were prosecuted with all the force that could advantageously be applied.

The progress made in 1860, although somewhat retarded by the unexpected irregularity of the site, and the occasional faulty nature of the rock, after it had been laid bare, has, upon the whole, been very satisfactory; and the workmanship and materials, thus far, are reported to be of the best description. Instead of finding the solid rock at a depth of one or two feet under the surface of the ground, as appearances indicated, it fell off suddenly in some places from ten to thirteen feet under that level, and the nature of the soil resting upon it, was such as to render it unsafe to build upon. It had therefore to be removed, down to the solid rock, upon which all the walls have been founded.

PARLIAMENTARY BUILDINGS.

The walls of the Library are now raised five feet above the finished level; those of the Legislative Halls and Rooms adjoining are on an average up to the level of the footings of the contract plans; and the walls of both wings, as well as the outside walls of the

south front are eleven feet above the same level. The arches of Door-ways in the Main Tower and the traceried windows of the Public Hall are fixed.

In connection with the warming and ventilation, the cold air ducts over which the warm air-vaults are to be constructed, are completed under all parts of the main buildings; and a considerable portion of the excavation for the cold air ducts outside the buildings is done.

The main sewer is also completed to a distance of 250 feet from the central court; and, with the exception of the arched covering, for a distance of fifty feet further. The excavation for the remainder, as far as the brow of the river bank, is also completed.

Large quantities of stone and other materials, were delivered last fall, and during this winter, sufficient for use during the approaching building season. The stones are being wrought, and other materials prepared, ready to go into the work.

The whole of the wrought iron joists for the construction of the fire-proof floors, have been delivered, and a large portion of those of the ground floor have been fixed in their places.

With these preparations, it is expected that all the walls of the two wings will be run up to their full height this fall, so as to admit of roofing them in before winter.

THE DEPARTMENTAL BUILDINGS.

The two fronts and the interior walls of the eastern block, are raised up to the level of the springing of the ground floor windows, while the back or inner walls are up to the level of the plinth; and all the masonry connected with the heating and ventilation, within the building is also completed. The walls of the principal tower are built several feet higher than the side walls, and have been kept in advance of them, from the commencement of the works, in order to allow for settlement.

On the left hand or western building, the works are not so far advanced. The south front, the inner and back walls, and the western return end, together with the Boiler-House, are raised up to the level of the plinth; and the masonry connected with heating and ventilation, in that part of the building is also completed. On the north-east wing, however, the excavation only is in progress, and the masonry not yet commenced.

All the wrought-iron joists for the fire-proof floors, have been delivered upon the Government ground, and those of the ground floor, as far as the buildings are ready to receive them, have been fixed in their places.

A large quantity of building material of various kinds has been placed upon the ground for carrying on the works as soon as the weather will admit of laying masonry. Ohio stones for dressings were delivered last fall, and are now being wrought and prepared, and both limestone and sandstone are in course of delivery. In view of these preparations it is expected that both buildings will be roofed in this fall, so as to admit of finishing off the interior during next winter.

In reference to the Nepcan sandstone used for facing all the external walls, both of the Parliamentary and Departmental Buildings, the Architects of the former report that "the effect of this sandstone facing is even better than we anticipated. The tints are so

“varied that the appearance of the buildings when completed will be rich in the extreme; “and we are satisfied that no amount of expenditure either in dressing or ornamental “carving on the limestone, would have produced anything approaching to a corresponding “effect.” In addition to this it is reported that this sandstone is fireproof, and cannot be acted upon injuriously by the weather.

HEATING AND VENTILATION.

The Contractor for the Heating and Ventilation has procured the greater part of his materials for the works, and is engaged in preparing and fitting them at his establishment at Montreal. He has delivered upon the ground at Ottawa, all the plates for the six Boilers; and will commence riveting them together, and laying down the pipes, as soon as the weather becomes favorable for that kind of work.

Having undertaken the responsibility of the success of the system of Heating and Ventilation adopted, he has made a journey to Washington and other cities in the United States, to observe the operation of the same system which has been introduced in the Capitol, and several other public buildings recently erected in those cities. This he has done with a view of perfecting his arrangements by the study of the most successful modern examples; and the plans being now completed, and having been approved by the Architects, the works are proceeding satisfactorily, in accordance therewith, and it is expected that they will be finished and ready for operation by the spring of 1862, as required by contract.

In order to carry out the arrangements for Heating and Ventilation so as not to interfere with the operations of the building contractors, it was essential to provide that they should themselves do all the masons' and bricklayers' work connected therewith. That they should construct the drains from the boiler houses, the cold air ducts and warm air vaults, the flues in the partitions for conducting the warm air to the several apartments, and those for carrying off the vitiated air. These several works have been accordingly completed by them, as far as the buildings have advanced; and as the bulk of this work within the buildings is below the ground floor, it will be observed from their present state of advancement, as before mentioned, that the greater part of it is now done.

THE GOVERNOR GENERAL'S RESIDENCE.

In pursuance of the public notice, eighteen tenders were received on the 10th March last, for the erection of the Governor General's Residence, according to the Architects plans, the lowest of which was that of Messrs. Jones, Haycock & Co. This tender was accepted, and after some delay in the drawing up of the Contract, they were called upon, on the 14th June, to sign it. This, however, they failed to do; and having suffered a fixed time for so doing to elapse, the question of making a selection from the other tenders is now under consideration.

The total expenditure upon these Public Buildings during the last year, for the work done on contracts, payments to Architects and foremen, and all contingent expenses, was \$423,141,98,

NEW COURT HOUSES AND JAILS.

CANADA EAST.

The progress made by the Contractors, with the thirteen new Court Houses and Jails in Lower Canada, was so unsatisfactory, that it became necessary, in order to secure their completion in proper time, to exercise the power reserved in the contract, of taking the works out of their hands and reletting them to other parties. The manner in which the Contractors failed to carry on the works, as required by the Contract, is set forth in the Report of Mr. Rubidge, (Appendix B.) to which reference is also made for the names of the parties to whom they were relet.

Since these works have been placed in other hands, the progress, generally, has been satisfactory. The new Contractors have done all that could be reasonably expected to advance the buildings; and they are now in a fair way to completion.

The several Court Houses at St. Scholastique, Beauharnois, Arthabaska, Sorel, Industrie, Sweetsburg, Montmagny, Malbaie, and Chicoutimi, are now roofed in, and will be completed in June or July next. Those at St. Hyacinthe, Beauce, and Rimouski, have their basement walls built, and the walls of the first-story raised above the ground floor; they will be completed by the end of this year. The Court House and Jail at St. John's was finished immediately under the Department, without the intervention of a Contractor.

PUBLIC BUILDINGS GENERALLY.

The measures which have been adopted, by this Department, for the preservation of the several public buildings in its charge, as well as for the repairs and alterations required in those leased for the several Departments of the Government in Quebec, are detailed in the Report, (Appendix B,) of the Assistant Engineer, which is herunto annexed.

All of which is respectfully submitted,

JOHN ROSE,

Commissioner.

APPENDIX TO THE REPORT
OF THE
COMMISSIONER OF PUBLIC WORKS,
FOR THE YEAR 1860.

APPENDIX A.

No. 1.

STATEMENT of the several Public Works under the charge of this Department, which are in use and yield Revenue, shewing the expenditure under the different heads during the year 1860, viz., on Construction, amount paid for Land damages, and the total cost of construction under this Department, to the 1st January, 1861, together with the cost of repairs and management for the same period.

NAME OF WORK.	Expenditure on Construction during the year 1860.	Amount paid for damages in 1860.	Total Expenditure on Construction, to 1st January, 1861.	Cost of Repairs and Management for 1860.
<i>Canals.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Welland	67,923 07	255 00	4,576,105 85	66,312 60
<i>St. Lawrence Canals, viz.:</i>				
Leachine.....	11,603 41	175 00	2,000,455 70	28,095 04
Beauharnois.....	2,351 77	14,331 50	1,589,170 38	12,715 09
Cornwall	3,009 14		466,045 74	13,574 39
Williamsburgh			1,089,739 93	9,918 33
Junction	30 00		230,766 11	133 78
General Expenditure	179 50		74,272 88	
Lock Gates	6,244 60		6,244 60	
Chambly			67,653 25	15,997 82
St. Ours		90 00	123,017 65	4,869 58
Ste. Anne's.....	740 55		111,796 57	1,750 45
Burlington Bay Canal.....	12,046 55		282,682 24	
<i>Slides and Dams, &c.</i>				
Ottawa	33,830 64		628,755 57	13,803 16
St. Maurice	866 06		242,584 51	8,160 44
Trent				200 00
Seguenay	8,038 99		40,865 07	545 96
<i>Harbours.</i>				
Port Stanley	1,708 99		224,837 48	
Union Suspension Bridge reconstruction.....	2,673 25		2,673 25	
	161,296 62	14,851 50	11,787,666 78	176,076 64

STATEMENT of the Public Works under the charge of this Department, incomplete, and as yet unproductive, but on which Tolls are to be levied as soon as they are available,--shewing the Expenditure thereon in 1860, on Construction, on Repairs and Management, and the Total Expenditure up to the 1st January, 1861.

NAME OF WORKS.	Expenditure on Construc- tion in 1860.	Repairs and Management during 1860.	Total Expenditure to 1st January, 1861.
	\$ cts.	\$ cts.	\$ cts.
Chats Canal.....	.....	.....	373,191 98
Songog Inland Navigation.....	2,325 55	613 50	103,809 61
	2,325 55	613 50	477,001 59

"Saguenay Works," which appeared in this Statement last year, being now completed and yielding Revenue, will be found in Statement No. 1.

No. 8.

STATEMENT of the several Public Works and Buildings in course of Construction under the charge of this Department, yielding no direct Revenue, but in use for the Public Service, and authorized by Legislative appropriations, showing the amount expended thereon during the year 1860, and the Total outlay upon them up to the 1st January, 1861; also the amount expended in repairs and maintenance for the same period.

WORKS.		Total outlay up to 1st January, 1860.	Expenditure during the year 1860.	Total outlay up to 1st January, 1861.
		\$ cts.	\$ cts.	\$ cts.
Parliament Buildings repairs, } Toronto		274,815 05		274,815 05
Government House.....	do			
Custom House.....	do	5,104 18		5,104 18
Post Office.....	do	27,986 07	80 00	28,066 07
Observatory.....	do	13,884 65		13,884 65
Female Lunatic Asylum.....	do	9,966 83		9,966 83
Osmonds Hall.....	do	159 30		159 30
Gun Sheds.....	do	3,679 23		3,679 23
Barracks, .....repairs, do		657 69		657 69
Railway Inspector's Office.....	do	525 62		525 62
Mechanics' Institute, Completing Building.....	do		16,000 00	16,000 00
Custom House.....	Hamilton	32,882 11	13,306 34	46,188 45
Post Office.....	do	52,625 42		52,625 42
Gun Sheds.....	do	5,566 67		5,566 67
Post Office.....	London	33,750 30	5,372 46	39,122 76
Custom House.....	Kingston	41,805 52		41,805 52
Post Office.....	do	39,273 95	52 00	39,325 95
Lunatic Asylum and Gaol.....	do	4,293 92		4,293 92
Public Buildings.....	Ottawa	10,052 97	423,141 98	433,194 95
Court House (omitted in Construction Account, 1855).....	Montreal	263,212 15	13,664 98	266,877 13
do Extraordinary Repairs.....	do		15,245 98	15,245 98
Custom House.....repairs	do	907 63	350 00	1,257 63
Gaol.....	do	1,343 60		1,343 60
Post Office.....	do	269 99	2,767 98	3,037 97
Normal School.....	do	6,358 57	92 63	6,451 20
Armory.....	do		856 68	856 68
Marine Hospital.....	Quebec	93,344 90	1,463 31	94,808 21
Custom House.....	do	217,789 17	27,389 87	245,178 04
Gun Sheds.....	do	4,545 42		4,545 42
Court House.....	do		199 75	199 75
Post Office and Parliamentary Buildings.....	do	31,096 78	28,794 40	59,891 18
do do additions thereto.....	do		1,623 59	1,623 59
Spencer Wood.....	do	4,299 35		4,299 35
Governor General's Residence, in consequence of Fire at Spencer Wood.....	do		8,781 67	8,781 67
Observatory.....repairs	do	318 77		318 77
Normal School.....	do	7,181 06		7,181 06
Gaol.....repairs	do	100 00	472 67	572 67
New Gaol.....	do		2,771 92	2,771 92
Gaols and Court Houses, C. E., 20th Viet., Ch. 44.....		35,363 66	77 78	35,441 44
Aylmer Court House.....repairs..		51,825 35	172,873 78	224,699 13
Kamouraska Gaol.....		523 65		523 65
Sherbrooke Court House and Gaol.....repairs..		5,074 04	5,767 67	10,841 71
Three Rivers Court House.....repairs..		3,555 65		3,555 65
St. Hyacinthe Court House.....repairs..		1,112 38	12 45	1,124 83
Dépôt at Anticosti.....		494 95	46 47	541 42
Bents, Repairs, and Maintenance.....		31 07	16 75	47 82
Court House and Gaol (Algoma).....		268,644 10	31,778 99	290,423 09
Gaol at Porcupine.....			67 53	67 53
			343 85	343 85

No. 3.—STATEMENT of Public Works, &c.—Continued.

WORKS.	Total outlay up to 1st January 1860.	Expenditure during the year 1860.	Total outlay up to 1st January, 1861.
<i>Light Houses.</i>	\$ cts.	\$ cts.	\$ cts.
Light Houses below Quebec	396,503 55	.....	396,503 55
Light House apparatus do do	54,602 16	.....	54,602 16
Light Houses (new) do do	15,601 59	172 28	15,773 87
Point Pelée Light House	53,104 90	11 95	53,116 85
Snake Island Light House	10,430 04	.....	10,430 04
Bay of Quinte Light House	108 16	.....	108 16
Light Houses Lake Huron.....	142,314 55	5,300 20	147,614 75
Light House apparatus, Lake Huron	74,949 16	.....	74,949 16
Floating Lights above Lachine	25,729 05	668 88	26,397 93
Gaspé Bay and Harbour Buoys	200 00	146 66	346 66
Inland Lake and River Lights.....	.....	4,124 03	4,124 03
Father Point Light House.....	.....	1,453 61	1,453 61
Ottawa River Navigation.....	.....	2,802 34	2,802 34
<i>Roads.</i>			
Canada and New Brunswick.....	110,120 53	32,568 65	142,689 18
Metapedia, South.....	16,500 00	4,371 84	20,871 84
Metapedia, North	2,475 66	6,131 82	8,606 98
Malbaie and Grande Baie	6,000 00	1,851 41	7,851 41
St. Denis and Cap Chats	16,000 00	3,672 14	19,672 14
Marmora	4,000 00	.....	4,000 00
Garrison Road, Toronto.....	1,600 50	.....	1,600 50
Gaspé Road.....	3,289 25	5,893 16	9,182 41
Côteau and Province Line Road.....	893 24	588 77	1,482 01
<i>Harbours and Piers.</i>			
Port Bruce	6,267 47	.....	6,267 47
Lake Huron	91,413 72	6,035 10	97,448 82
Pier at St. Anicet	77 71	10 26	87 97
L'Original	2,000 00	.....	2,000 00
Landing Piers	768,971 02	.....	768,971 02
Repairs of Piers	6,792 30	.....	6,792 30
Dredging Narrows, and New Bridge, Lake Simcoe.....	10,138 30	.....	10,138 30
Dredging at Picton and Presqu'isle	1,126 28	346 50	1,472 78
Dredging at St. Clair Flats.....	19,984 45	.....	19,984 45
Richelieu Rapids improvements, Ste. Anne de la Perade.....	13,713 96	.....	13,713 96
North River and Petite Navigation Bridge improvements....	3,600 00	.....	3,600 00
River Thames Navigation improvements.....	3,814 42	7 00	3,821 42
Dredging Vessels, Steam Pumps, etc.....	2,029 50	612 33	2,641 83
.....	.....	850,177 91	.....

No. 4.

**STATEMENT of Expenditure on certain Miscellaneous Services under this Department,
during the year 1860.**

	\$ cts.
Emigration and Quarantine Service, 1859	140 13
Tug Boats below Quebec, balance of Contractor's Bonus and Tariff allowed, 1859.....	31,357 69
Provincial Steamers	38,155 48
Tug Boats, upper St. Lawrence.....	24,004 67
Steamboat Service, Lower Provinces, balance of Appropriation, 1859	5,000 00
Trinity House, Quebec, 1859.....	7,600 00
Ottawa Survey and Surveys generally.....	12,318 38
Arbitrations.....	17,870 25
Removal to Quebec, 1859.....	2,454 40
Special Service to the Gulf, 1859	2,400 00
Advertising Sale of Provincial Steamers	148 49
Gaspé Harbour Maintenance.....	100 00
Visit of His Royal Highness the Prince of Wales, payments to 31st December.....	173,867 40
Contingencies of Department	1,077 00
	<hr/> 316,493 89
<i>Less :</i>	
Included in Nos. 1 and 3 Statements, and also, under the head of Arbitrations	1,108 77
	<hr/> \$315,385 12

STATEMENT of the Expenditure incurred under this Department, for the Repairs and Management of the Ordnance Canals, for the year 1860, and the Gross Revenue therefrom for the same period.

N A M E.	Extraordinary Repairs.	Ordinary Repairs and Management.	Total Expenditure.	Gross Revenue.	Cost of Collection.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Rideau Canal .....	.....	22,311 90	22,311 90		
Carillon and Grenville Canal .....	.....	10,092.16	10,092 16		
Breach at Long Island .....	.....	.....	.....
From Sundries .....	.....	.....	.....
Lower Brewers	2,305 20	.....	2,305 20		
Bridge at Newboro'	1,758 62	.....	1,758 62		
Mitre Sill, Black Rapids	1,410 58	.....	1,410 58		
	5,474 40	32,404 06	37,878 46		

No. 6.

A DETAILED STATEMENT of the Expenditure incurred in Repairs and Maintenance of Provincial Light Houses, for the year 1860, under this Department.

No.	Name of Light.	Name of Keeper.	Amount	Supplies	Total.
			of Salary paid.	and Repairs.	
			\$ cts.	cts.	\$ cts.
1	Lachine Pier.....	John Norton	385 00	494 44	879 44
2	Light Ship No. 1.....	Pierre Landre	250 00	268 57	518 57
3	Do. No. 2.....	Benjamin Picard.....	250 00	390 08	640 08
4	Do. No. 3.....	Joseph McLoche.....	225 00	275 59	500 59
5	Beaubaruois.....	Peter Shannon.....	435 00	*1454 70	1889 70
6	Grosse Point.....	A. McDonald.....	175 00	123 69	298 69
7	Mackie's Point.....	E. S. Johnson.....	435 00	356 00	1041 00
8	Cherry Island.....	G. H. Johnson.....	250 00		
8½	Do. Light Ship.....	Thomas Hill.....	345 00		705 49
9	Lancaster Pier.....	Richard Elliott.....	140 00	*263 71	403 71
10	Cole's Shoal.....	Joseph Austin.....	120 00	248 59	368 59
11	Grenadier Island.....	J. W. Allan, Nathl. Orr.....	140 00	*278 11	418 11
12	Lindoe Island.....	Jas. McDonald.....	260 00	*423 63	683 63
13	Gananoque Narrows.....				
14	Jack Straw Shoals.....	Daniel Bryant.....	560 00	*1050 10	1610 10
15	Spectacle Shoal.....	Joseph Mervin.....	120 00	268 18	388 18
16	Red Horse Rock.....	L. Herchbmet.....	435 00	370 68	805 68
17	Burnt Island.....	John Dunlop.....	435 00	591 78	936 78
18	Snake Island.....	Joseph Sweetman.....	510 00	818 32	1328 32
19	Nine Mile Point.....	W. A. Palin.....	435 00	*823 40	1258 40
20	False Ducks.....	Samuel Wilson.....	354 93	603 37	958 30
21	Point Peter.....	William Sweetman, Senr.....	325 00		
22	Scotch Bonnet.....	William Sweetman, Jr.....	250 00	920 77	1495 77
23	Presqu' Isle.....	George Roddieck.....	435 00	806 51	1241 51
23½	Do. Range Lights.....	George Durnan.....	435 00		1301 59
24	Gull Island.....	John Davidson.....	400 00	118 01	558 62
25	Gibraltar Point.....				
26	Burlington Bay.....	Jonathan Woodall.....	343 75	648 25	992 00
27	Oakville.....	James Fortier.....	400 00	885 52	1285 52
28	Port Dalhousie.....	John Burgess.....	435 00	*728 30	1161 30
29	Port Colborne.....	Peter Baikie.....	445 00	*511 11	956 11
30	Mohawk Island.....	William Field.....		207 50	207 50
31	Port Maitland.....	H. H. Clarke.....	435 00	*778 49	1213 49
32	Port Dover.....	Alexander Sutherland.....	320 00	312 55	632 55
33	Long Point.....	Richard Ead.....	144 00	150 00	294 00
34	Port Burwell.....	Peter McIntyre.....	375 00		
35	Port Stanley.....	William Wadsworth.....	305 57	*746 37	1426 94
36	Point Pelee.....	James Cummins.....	435 00	*935 84	1370 84
37	Pelee Island.....	James Hackett.....	435 00	530 57	974 57
38	Bois Blanc.....	Thom Cartier.....	435 00	111 00	1120 69
39	River Thames.....	Fidler.....	325 00	570 27	895 27
40	Goderich.....	John Young.....	435 00		
41	Point Clark.....	Thomas Kilty, Asst.....	300 00	*944 18	1679 18
42	Chantrey Island.....	D. McG. Lambert.....	435 00	870 05	1417 65
43	Isle of Cores.....	Assistant.....	112 50		
44	Griffith Island.....	D. McBeath.....	435 00	1178 37	1900 87
45	Nottawasaga Island.....	William McBeath, Asst.....	275 00		
		E. Collins.....	12 50		
		Vesey C. Hill.....	435 00	478 30	913 30
		George Collins.....	435 00		
		D. McBeath.....	108 75		
		John Merrill.....	150 00	944 14	1754 39
		C. Collins, Asst.....	112 50		

No. 6.—A DETAILED STATEMENT of the Expenditure incurred in Repairs and Maintenance of Provincial Light Houses, for the year 1860, under this Department.
—Continued.

No.	Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
			\$ cts.	\$ cts.	\$ cts.
46	Christian Island.....	William Hoare.....	435 00	1025 31	1460 31
			16,619 50	25,241 62	41,861 12
<i>New Light Houses.</i>					
	Green Shoal			291 38	291 38
	Point Claire, No. 1.....			312 88	312 88
	Do. No. 2.....			325 58	325 58
	Management, Salary of Superintendent, and his travelling expenses, freight, and charter of Steamer delivering Supplies, Advertising, &c.			3926 40	3926 40
	Placing Buoys, Bois Blanc.....			86 88	86 88
	Do. do. Lake St. Francis.....			178 01	178 01
	Supplies on hand in Store.....			580 00	580 00
			16,619 50	30,942 75	47,562 25

Under the heading of Supplies and Repairs are included Works of permanent construction where needed marked (*)

No. 7.

STATEMENT shewing the Total Amount expended under the Department of Public Works, during the year 1860, as detailed in the foregoing Statements, numbered 1, 2, 3, 4, 5 and 6.

STATEMENT.	Repairs and Maintenance.	Construction.	Miscellaneous.	Total.
No. 1	\$ cts. 176,076 64	\$ cts. 166,148 02	\$ cts.	\$ cts. 342,224 66
2	613 50	2,325 55	.....	2,939 05
3	78,559 18	771,618 73	.....	850,177 91
4 .....	.....	.....	315,385 12	315,385 12
5	37,878 46	.....	.....	37,878 46
6	47,562 25	.....	.....	47,562 25
	340,690 03	940,092 30	315,385 12	1,596,167 45

APPENDIX B.

REPORT ON PUBLIC BUILDINGS, IN CHARGE OF THE DEPARTMENT OF PUBLIC WORKS, FOR 1860.

SIR :—I have the honor to lay before the Commissioner, the customary report of the measures taken, during the past year, for the maintenance and repairs of the several Public Buildings in charge of this Department.

POST OFFICES.

LONDON.—This Building, upon its completion, in April last, was handed over to the proper authorities for the use of the public. No additional expenditure has since been required, and there is a balance of the appropriation for its construction yet on hand.

HAMILTON.—All the improvements alluded to in last year's Report have been effected, and the building is, consequently, rendered more secure and convenient than formerly.

TORONTO.—A small sum has been expended, in planking the sidewalks around this building.

KINGSTON.—A porch has been constructed within the lobby of the main entrance.

MONTREAL.—In addition to the outlay for works required by the District Post Office Inspector, the chimney of an adjoining house, found to be in a dangerous state, has been rebuilt; the platform for mail service enlarged; and the enclosure of the yard newly planked. All these improvements have been satisfactorily executed.

QUEBEC.—Several alterations, necessitated by the increased business consequent upon the removal of the Seat of Government to Quebec, have, at the request of the Deputy Post Master General, been made in this building; these changes have also served to render it more convenient for the community at large.

PROVINCIAL CUSTOM HOUSES.

QUEBEC.—This building was finished and handed over to the Custom's Department in July last. Since the final settlement with the Contractor, the only additional expenditure has been for six outside winter porches, supplied at the request of the Collector.

MONTREAL.—The outside walls have been cemented and pointed, and the entrance and other woodwork painted, at a cost of \$350. This building is quite inadequate in size for the public wants.

KINGSTON.—The hot air furnace and flues, found to be defective, have been repaired during the past year. The building is thus rendered safer against accident by fire. Several changes have also been made in the interior arrangement of the basement apartments.

TORONTO.—Nothing has been expended by this Department, during the past year, upon this building.

HAMILTON.—Possession of this building was given to the Collector of the Port last summer; hydrants have been placed within it, and lightning rods fixed, to prevent accident by fire. The drainage of the basement has also been materially improved, and the chimnies raised to improve the draught, which was found to be defective.

MARINE HOSPITAL, QUEBEC.

Upon the application of the Trustees, the roof of this building has been thoroughly repaired, and the House Surgeon's apartments altered and improved. The wooden ventilating flues connecting with the chimney shafts, (which caught fire twice) have been removed, and detached galvanized piping substituted. This work was satisfactorily done.

THE GOVERNOR'S RESIDENCE.

On the evening of the 28th February last, a fire occurred at "Spencer Wood," which could not be extinguished until the whole of the state portion of the building was destroyed. The servant's wing, the stables, and the outbuildings were, however, saved, together with the greater part of the furniture, the latter being, more or less, in a damaged condition. In order to provide a suitable residence for His Excellency, the Department leased the property known as "Cataraqui," owned by Henry Burstall, Esq., of Quebec, and situated on the St. Louis Road, about three miles from the city. The house, which is of brick, has seventeen and a-half arpents of land attached to it. The annual rental is Four Hundred Pounds Currency. Additional accommodation had, of course, to be provided; and a kitchen and servants' apartments have been built; the stabling has also been enlarged, and a guard house erected. The hot air furnaces have also been reconstructed, and the conducting pipes better protected. These improvements were rapidly effected, and their cost is shewn in Statement No. 3.

TORONTO BUILDINGS.

MECHANICS' INSTITUTE—This building, not having been finished according to the agreement made in 1855, when it was leased to Government, the President demanded \$18,299. as the value of completing it according to the original intention. This sum was subsequently reduced to \$16,000, to pay which there is a Legislative Grant of \$13,863, leaving a further sum of \$2,137 to be provided.

An outlay of \$500 was found to be necessary, in order to make good the damages done to the building on the corner of Wellington and John Streets, whilst occupied as the Receiver General's Office.

DEPARTMENTAL BUILDINGS, QUEBEC.

The several buildings leased for, and occupied by, the Government Departments in Quebec, known as Public Works, Minister of Finance's, Postmaster General's, Executive Council, Provincial Secretry's, Crown Law, Receiver General's, and Adjutant General's Offices; also, the Old Chateau, belonging to Government, and occupied by the Crown Lands and Provincial Registrar's Offices, have all required more or less repairs, alterations or extended accommodation, which it would be too tedious to particularize. The amount expended on these is given in Statement No. 3.

JAILS AND COURT HOUSES.

MONTREAL COURT HOUSE.—The ceilings of this building have been relieved from the inordinate weight of plaster work which threatened their destruction. The roofs have also been strengthened, and several alterations and improvements made in the Court Rooms, particularly as regards their ventilation. The old Armory has been removed, and the ground levelled by the City Corporation. A new dwarf wall, with iron railing, and gateways, have been constructed on the boundary of the lot, and several minor repairs effected.

MONTREAL JAIL.—A six inch pipe, connecting with the main in St. Mary Street, has been laid down, and an adequate supply of water distributed throughout the several stories of the Prison, with hose attachments, for use in case of fire. This work has been principally performed by the convicts.

QUEBEC COURT HOUSE.—Some important repairs to the walls and passages adjoining the Judges Chambers, and the re-building and pointing the chimneys, have been executed.

QUEBEC JAIL.—A small expenditure has been incurred with the object of maintaining the old Prison in a state of tolerable repair until the new Jail, now under contract, shall be ready for occupation. The latter will be finished in the fall of 1862. Plans for the new Jail were prepared by a Quebec architect, and approved by the Board of Prison Inspectors. The tender made by Messrs. Murphy & Quigly was accepted, and the contract adjudged to them for a sum of \$64,000. This expenditure extends to the building of the central portion and one of the wings, giving about 140 cells for prisoners,—reserving the erection of the other wing for some future period. Active measures have been taken by the contractors for the prosecution of the work; and materials are now being delivered in order to commence building as early as possible next Spring.

THREE RIVERS COURT HOUSE AND JAIL.—Upon the Report of the Board of Prison Inspectors, and the requisition of the Sheriff, representing the dilapidated condition of these buildings, and the necessity of immediate repairs, the Local Officer of this department was instructed to carefully examine them, and estimate the cost of such as were deemed indispensable. The sum of \$1,373.28 was consequently spent upon the Court House, and \$1,112.17 upon the Jail; in all, \$2,485.45. The work has been satisfactorily executed.

SHERBROOKE COURT HOUSE AND JAIL. —	} No expenditure has been incurred upon
AYLMER Do Do	
	} these buildings during the past year

ALGOOMA COURT HOUSE AND JAIL.—A contract for the erection of these buildings has been entered into, and the materials are ready to be shipped by the contractor on the opening of the navigation. They will be erected on the lot set apart for that purpose in the Survey of the Town plot of Sault Ste. Marie, and will be ready for occupation in September next.

DISTRICTS OF GASPE AND BONAVENTURE.

JAILS AND COURT HOUSES.

PERCÉ.—Pending the decision of the Executive with respect to the new Jail so urgently called for at this place, the sum of about \$850 has been expended upon certain indispensable repairs. After conferring with the Board of Prison Inspectors, and examining these localities, Mr. G. F. Baillargé reports as follows:—

“At New Carlisle, unless the entire building which is now used as a Court House and Jail, is converted altogether into a Jail, it would be useless, in my opinion, to expend any money thereon, as the present cells, and the space for the Jailor's residence in the lower story cannot be improved to any advantage.

“At Percé, the building which also answers the double purpose of a Court House and Jail, is in such a dilapidated state, its walls are so slight and so cracked in many parts, that even if it were repaired, it would make a very unsafe Jail, although it might answer for a Court House. An entirely new and distinct building should be erected for the Jail, and a wall would have to be built around the Jail yard to isolate the prisoners from the residents in the neighborhood.”

In accordance with the foregoing views, plans, specifications and estimates of the additions, alterations and improvements called for at Percé and New Carlisle, have been prepared.

JAILS AND COURT HOUSES, ERECTED UNDER THE JUDICATURE ACT FOR LOWER CANADA, 20 VIC., CAP. 44.

Owing to the numerous complaints made to this Department of the inadequate arrangements of the Contractors, the Commissioner, early last season, instructed the proper officers to visit the various sites and to report upon the state of the works. Although the weather was then very favorable for building operations, it was found that the works were, at several places, wholly suspended. Under these circumstances, the contractors were notified that unless a reasonable force of laborers and artizans were employed at each site, by the tenth June, 1860, the works should, in accordance with the clause in their Contract to that effect, be taken out of their hands.

The average number of workmen employed at each place, on the day above mentioned, being only one-third of that required, and the reports regarding the progress and character of the works being otherwise of a very unsatisfactory nature, they were taken out of their hands and re-let upon new tenders to the following parties, viz. :—

1. St. Scholastique,	Brown & Watson,
2. Industrie,	T. Vezina,
3. Sorel,	T. Vezina,
4. Malbaie,	F. X. Cimon,
5. Rimouski,	C. Côté,
6. Montmagny,	Chas. Peters,
7. Beauce,	A. Trepanier,
8. Arthabaska,	Brown & Watson,
9. Sweetsburg,	G. H. Sweet,
10. St. Hyacinthe,	Chas. Peters,
11. Beauharnois,	Brown & Watson,
12. Chicoutimi,	J. G. Gagnon,

The 13th building, at St. Johns, has been completed immediately under the Department, by Mr. Larose, Superintendent. The Court Houses at St. Schastique, Beauharnois, Arthabaska, Sorel, Industrie, Sweetsburg, Montmagny, Malbaie and Chicoutimi, are roofed in, and will be completed by June or July next. At St. Hyacinthe the walls are up to two feet above the ground floor. At Rimouski the walls of the ground story are up to the level of the first floor, and at Beauce they are about five feet above the ground floor. These will be completed by the end of this year.

Respectfully submitted,

(Signed,)

F. P. RUBIDGE,

Assist. Engineer Pub. Works.

T. TRUDEAU, Esq.,
Secretary, Public Works,
Quebec.

APPENDIX C

ANNUAL REPORT OF THE SUPERINTENDENT OF THE
WELLAND CANAL.WELLAND CANAL OFFICE,
St. Catharines, December 21, 1860.

SIR,—I have the honour to submit my Annual Report on the Works, upon this Canal, entrusted to my charge, with the accompanying Schedules shewing the several expenditures made upon them in their construction, management and repair; the first being paid from the appropriations made by the Legislature, and the other from Canal Revenue; together with schedules of the lands sold, water power leased, and rents collected thereon; the fines and damages collected from vessels for committing breaches of the Canal Regulations, and damages done to its Works, &c., and an estimate of the probable cost of making repairs, &c., for the ensuing season.

WORKS OF CONSTRUCTION.

The Works which have been authorized and in progress this season, comprise the enlargement of the Canal above Allanburgh, alluded to in my previous reports; the construction of a pair of Guard Gates above Thorold; raising the Piers at Ports Colborne and Maitland, and raising the banks of the Canal, so as to enable vessels to carry through it greater cargoes. Since my last annual report, the work of enlargement of the Canal, above Allanburgh, has been steadily prosecuted by the contractor with his usual number of steam dredges or excavators, and other machinery. He has now provided another dredge, of increased power, to be used next season in expediting the completion of the work.

Towards the putting in of the Guard Gate above Thorold this winter, the contractor has provided and delivered all the timber prepared and dressed, and nearly all the stone for building the walls, and he is steadily engaged in the delivery of the required quantity. He is also proceeding with a sufficient force in getting out the excavation, preparatory to laying the foundation timber, &c. With the exertions being made, it is confidently believed that this work will be fully completed by the time specified in the Contract, and ready for use by the opening of the navigation next spring.

The work of raising the Piers at Ports Colborne and Maitland, has been fully completed, in accordance with the terms of the Contracts, and they have withstood the late unprecedented and disastrous gales without, after a careful inspection, any apparent injury.

The work of raising the Canal Bank, to obtain the increased depth of water desired, has been proceeded with as circumstances required. Towards its completion there is available, from the appropriation, the sum of \$3,272 for the work of the ensuing season.

WORKS OF MANAGEMENT AND REPAIRS.

The Canal was opened for the passage of vessels on the 1st of April, and closed, by frost, on the 6th December, giving 250 days of navigation, inclusive of interruptions.

The supply from the Grand River, from whence the Canal is fed, continues, annually, to diminish, as has been previously reported from time to time; so much so, that during this season it was much more scant, than it has been for some years previous. It is therefore necessary that all escapements of water be staunch, as it will be some time yet before the Lake Erie level can be obtained. There is a considerable leakage in the

Dunnville Dam; one-half of this Dam was staunched many years ago. The staunching of the remaining part, will prevent a considerable loss of water. A sum is included in the estimate for making this repair.

Previous to the opening of the navigation last Spring, the repairs of this Canal (duly authorized) had been completed in an effectual manner; owing to which but little additional repairs have been required during the season, further than those necessary to meet casualties.

The repairs of Piers at Ports Colborne and Maitland, damaged by the storm on the 26th November, 1859 (alluded to in my last annual report), have been made as therein required, at a less cost than the approximate estimate.

INTERRUPTION TO THE NAVIGATION.

On the 7th May last, the navigation of this Canal was interrupted four days, by a Propeller carrying away the Gates of Allanburgh Lock. The cost of the repairs, (after making allowance for the difference between the cost of the new Gates, and the value of the old ones,) was levied upon the Propeller. There were but four other delays in the Navigation. Three of these comprised but a few hours at each time, occupied in placing new Gates, where the old ones had failed.

The fourth occurred before daylight, on the morning of the 9th October, and was occasioned by the negligence of the employes of the Buffalo and Lake Huron Railway Company, in not stopping their freight train on approaching the Swing Bridge crossing the Canal at Port Colborne, as should be done in all cases by the provisions of the Railway Act, but which have been too frequently violated. The consequence was that the Bridge was shoved into the Canal by the locomotive, and the navigation stopped, during which time eighteen vessels had accumulated. Immediately on receiving intimation of the fact, I proceeded to the spot, and found that very insufficient means were being resorted to, by the officers of the Railway Company, to restore the Bridge. After waiting the time, in which they said they would have the obstruction removed, and finding that very little was effected, I gave directions to the Harbour-master, to give every assistance with the means at his command; and so in about thirty-five hours was enabled to pass the vessels.

The expenditure in the construction of Lock Gates, has been incurred in providing a spare set, to suit either the Port Robinson or Aqueduct Lock. As the original Gates for these Locks have been ten years constructed, it was deemed advisable to provide new Gates, in case the old ones should suddenly fail.

When the state of the old Gates of several Locks showed it to be advisable, new Gates have been substituted, and there are now on hand spare Gates to meet casualties. The reconstruction of the Hydraulic Aqueduct is being now proceeded with, and will be complete on the opening of the Navigation, so that the Mill owners will not experience any detention. The probable cost of this work is embraced in the Schedule.

SCHEDULE OF REPAIRS.

SCHEDULE Nos. 1 & 2. [not printed].—Shew the several appropriations made by the Legislature, with the expenditure to the 1st December, 1860.

These Schedules recapitulate the details given in Schedules Nos. 1 & 2 of last years' Report, and may be summed up as follows:—

Estimates for proposed works, as enumerated in Report for 1859	{ \$204,568
Amount voted in 1854	\$58,340
“ “ 1858	12,500
“ “ 1859	5,875
“ “ 1860	25,625
	—————102,340
Still required	<u>\$102,228</u>

SCHEDULE No. 3. [not printed].—Gives the cost of the Management and Repairs of the Canal for this year.

These expenditures have been paid from the Tolls.

The cost of management is	\$43,011. 32
Do. repairs "	23,170. 05
Total for management and repairs	<u>\$66,181. 37</u>

Included in the above is the amount paid for gas, \$123½ per lamp per annum, being \$7,400. 29 in all; over 17 per cent on the whole cost of management. The gas is supplied by Contract, which has an unexpired term of 9 years.

On the Repairs \$11,694.51 have been expended upon the Piers at Port Colborne and Maitland, providing 13 Gates, and repairing damages done to some of the Works of the Canal by vessels, upon which there have been levied \$2,116.10. See Schedule No. 6.

SCHEDULE No. 4. [not printed].—Gives the water power and other property leased on this Canal, with the erections, &c.

The Annual Rent	\$9,057.10
The amount paid in 1860 is	7,686.97
The arrears remaining due to 1st instant are	8,547.12

Towards the collection of the arrears, every exertion has been made, and in order to enforce the payment thereof, where it can be done, the water has been shut off from the Mills until these claims shall be settled. But there are several cases where the arrears must be looked on as bad debts, the parties named being insolvent, the premises burnt, or in a dilapidated condition.

The amount of the Annual Rent, given above, is fixed by the aggregate amount of the leases. In many cases water power so leased has not been used for years; the premises allowed to fall into a state of ruin, and deserted by the Lessees; so that in fact the total amount of rent that can be collected, will be far short of the stated annual rental. A portion of the arrears also cannot be collected, for the same reason. In all cases legal steps are being taken to get in the arrears, where it is practicable, and where not, the Department to resume full possession of the water power.

SCHEDULE No. 5. [not printed].—Shews the Land disposed of not being required for Canal purposes, with the Sales, payments made thereon, and the balance unpaid.

SCHEDULE No. 6.—Gives the Vessels upon which penalties have been imposed in consequence of infringements of the Canal Regulations by them, and the portion of the same levied.

SCHEDULE No. 7 [not printed].—Gives an approximate Estimate of the probable cost of making the Canal Repairs for 1861, amounting to \$20,000, including the construction of Eight Gates for the Mountain Locks; \$1,800 for rebuilding the Hydraulic Aqueduct, and \$2,200 for staunching the Dunnville Dam.

Appended is a statement shewing the Revenue of this Canal for the last three years

The amounts collected for Tolls this year are \$165,220.65, from which the authorized deductions are being made from time to time, as the Set passes are presented to the Collectors. 3,744 Vessels passed through the Canal this year, being 1,155 more than last year, and 18 more than in 1858.

The foregoing, with the accompanying Schedules, will, I trust, afford all necessary information.

I have the honor to be,

Sir,

Your obed't serv't,

To the

(Signed,)

S. D. WOODRUFF.

Secretary of Public Works,

Quebec.

WELLAND CANAL.

Table of its Revenue for the last three years.

Port of Collection.	1858.	1859.	1860.
	\$ cts.	\$ cts.	\$ cts.
Colborne.....	153,219 20	81,305 63	116,033 55
Robinson	3,521 27	2,804 20	3,502 78
Maitland	1,456 33	1,152 29	1,685 31
Dunnville	2,461 88	3,667 33	5,261 40
St. Catherines.....	1,668 47	1,251 78	1,259 71
Dalhousie.....	45,444 37	33,964 55	37,477 90
	207,771 52	124,145 78	165,220 65
Collected on Rents.....	13,068 19	10,545 91	7,686 97
Do. on Lands sold.....	804 56	200 00	1,737 07
Do. on Fines and Damages.....	947 29	4,176 82	2,116 10
Totals	222,591 56	139,068 51	176,760 79

WELLAND CANAL.—SCHEDULE No. 3.—Statement showing the Amount of Fines and Damages levied, the Amount paid, to the 1st December 1860, and the Balance due to the 1st December 1860.

Year.	Date.	Description of Vessels, &c.	Name of Vessel, &c.	Amount of Fines Levied.	Amount paid to 1st Dec. 1860.	Amount remaining unpaid, 1st Dec. 1860.	REMARKS.
1857	April 22nd.....	Schooner.....	S. H. Lathrop.....	\$ cts. 2500 00	\$ cts. 2500 00	\$ cts. 2500 00	In hands of Solicitors for collection.
do	do 30th.....	Propeller.....	St. Nicholas.....	80 00	4800 00	4880 00	do.
do	May 27th.....	Schooner.....	Wilson.....	5 00	5 00	5 00	do.
1858	April 30th.....	do	Mobegan.....	1953 00	1953 00	1953 00	In hands of Solicitors for collection.
do	May 3rd.....	do	Amelia.....	1246 00	1246 00	1246 00	do.
do	September 29th.....	do	R. Campbell.....	14 00	14 00	14 00	
1859	do 10th.....	Propeller.....	Banabee.....	10 00	19 00	19 00	
do	October 22nd.....	Schooner.....	Amelia.....	5 00	5 00	5 00	
do	do 31st.....	Propeller.....	Prairie State.....	10 00	10 00	10 00	
do	November 26th.....	do	Kentucky.....	22 00	22 00	22 00	
1860	April 4th.....	Schooner.....	Sir E. W. Head.....	10 00	10 00	10 00	
do	do 17th.....	do	Matthew McNair.....	20 00	20 00	20 00	
do	do 17th.....	do	Hungarian.....	1749 10	1749 10	1749 10	
do	May 7th.....	Propeller.....	Buckeye.....	10 00	10 00	10 00	
do	do 14th.....	Schooner.....	Northumberland.....	3 00	3 00	3 00	
do	do 16th.....	do	New London.....	10 00	10 00	10 00	
do	do 18th.....	do	Cuba.....	25 00	25 00	25 00	
do	do 17th.....	Propeller.....	Ontario.....	20 00	20 00	20 00	
do	do 23rd.....	Schooner.....	Minnie Kinnie.....	6 00	6 00	6 00	
do	July 6th.....	do	Liverpool.....	20 00	20 00	20 00	
do	do 7th.....	Propeller.....	Vermont.....	10 00	10 00	10 00	
do	August 15th.....	Schooner.....	Berlin.....	4 00	4 00	4 00	
do	do 27th.....	Scow.....	J. Carl.....	20 00	20 00	20 00	
do	do 31st.....	Steamer.....	George Moffatt.....	10 00	10 00	10 00	
do	September 3rd.....	do	M. Cellus.....	20 00	20 00	20 00	
do	do 19th.....	do	Lacy A. Blossom.....	20 00	20 00	20 00	
do	do 22nd.....	do	Tartar.....	20 00	20 00	20 00	
do	do 24th.....	Propeller.....	Prairie State.....	63 00	63 00	63 00	
do	October 13th.....	Schooner.....	Minnehaha.....	30 00	30 00	30 00	
do	do 26th.....	Brig.....	Atlantic.....	25 00	25 00	25 00	
Totals.....				104 00	1286 10	2116 10	

S. D. WOODRUFF,
Superintendent, Welland Canal.

(Signed,) HAMILTON H. KILLALY, Chief Engineer, Welland Canal.

THOMAS ADAMS,
Paymaster and Clerk.
(Signed,) 81. Catherine, December 21st, 1860.

LACHINE CANAL.

DETAILED STATEMENT of the Amount of Fines and Damages collected by the order of the Superintendent, for the year 1860.

Date.	Name of Vessel, &c.	Name of Owners.	Amount.		Remarks.
			\$	cts.	
1860.					
June 2.....	1 Crib round timber.....	Kennedy.....	4	00	Abandoned in channel, and obstructing navigation.
" 6.....	Steamer Ranger.....	S. T. Jones & Co.....	5	00	Damage to foot bridge, &c., Lock No. 4.
" 14.....	1 Crib round timber.....	Greer.....	4	00	Abandoned in channel, and obstructing navigation.
" 26.....	2 Do. do.	Johnston	8	00	
July 4.....	1 Do. do. ....	.....	4	00	
" ".....	1 Crib flat timber .....	.....	4	00	
" ".....	1 " square " .....	.....	4	00	
" ".....	3 " flat " .....	.....	12	00	
" ".....	1 " " " .....	.....	4	00	
" ".....	1 " " " .....	.....	4	00	
" ".....	1 " " " .....	.....	4	00	
" ".....	1 " " " .....	.....	4	00	
" ".....	1 " " " .....	.....	4	00	
August 14.....	Steamer Bownanville.....	Percy.....	20	00	Obstructing Navigation.
" 21.....	Scow Huron.....	Casa.....	2	00	Violating Canal Regulations.
" 28.....	Barge Glaushee.....	McLean	5	00	Damage to the Mechanical Structure,
September 7.....	Schooner St. Albans.....	Gates & Co.....	2	50	Breaking Bridge Lamp, Bridge No. 1.
" 11.....	1 Crib square timber.....	Brewster.....	4	00	Abandoned in channel, and obstructing navigation.
" 17.....	1 " " "	Do.	4	00	do.
" ".....	Barge Cheveren.....	Lusignan.....	10	00	Damage to swing bridge at Lock No. 2.
" 22.....	1 Crib sawed lumber.....	Torrance.....	5	00	Abandoned in channel, and obstructing navigation.
" ".....	1 " square timber.....	Lapoint.....	4	00	do.
" 25.....	1 " round "	McGauvran	4	00	do.
" ".....	1 " square "	McWalters	4	00	do.
October 4.....	Schooner J. Patton.....	Baffon & Co.....	10	00	Damage to railing, &c., Lock No. 3.
" 26.....	Schooner Alma.....	Franchmontague	28	00	Do. Steam Dredge
November 8.....	Schooner Sea Flower.....	Cermier	10	00	Do. foot bridge, &c., Lock No. 4.
" 13.....	Steamer Whitehall.....	McNaughton	40	00	Do. do. and railings, Lock No. 4.
" ".....	1 Crib square timber.....	Dinning.....	4	00	Abandoned in channel, and obstructing navigation.
" ".....	1 " " "	Dickson	4	00	do.
		J. Johnston, expense of securing lumber..	3	00	
			224	50	

BEAUHARNOIS CANAL.

AMOUNT of Fines and Damages collected by order of the Superintendent of the Beauharnois Canal for the year 1860.

Date.	Name of Vessel.	Master or Owner.	Amount.		Remarks.
1860.			\$	cts.	
April 23.....	Schooner Experiment.....	.....	25	00	Injury to Upper Gates, Lock 13.
May 7.....	Barge Louisa.....	S. Larance, Jnr.....	2	00	" St. Timothé, Waste Weir.
" 14.....	Schooner Grace Murray.....	Of Chicago.....	4	50	" Upper Gate, Lock 13.
June 4.....	Propellor Colonist.....	Henderson & Co.....	41	50	" Lower Gate, Lock 12, and Fine.
" 22.....	Steamer St. Lawrence.....	Smith & Co.....	11	94	" Lower Gate of Guard Lock.
" 26.....	Steamer George Moffat.....	Henderson & Co.....	4	00	" Fine for passing nightly without Light.
"	Barge.....	"	3	00	" Foot Bridge, Lock No. 10.
July 24.....	Steamer Passport.....	Hamilton.....	4	44	" Upper Gate, Lock No. 8.
" 31.....	Propellor Avon.....	Redcliff.....	14	58	" Lower Gate, Lock No. 12.
Oct'r. 11.....	Schooner G. W. Holt.....	.....	12	00	" And Fine to Bridge over Lock 12.
" 12.....	Propellor Alps.....	Jacques & Co.....	12	00	" Bumping posts, Lock No. 11.
" 13.....	Barge Utility.....	Henderson.....	1	50	" Lock Lamp, Lock No. 14.
Nov. 5.....	Schooner Liverpool.....	Colonial.....	2	50	" Lower Gate, Lock No. 12.
			138	96	

(Signed,)

PIERRE LAURENCEL,
Superintendent.

CHAMBLY CANAL.

AMOUNT of Fines and Damages collected by order of the Superintendent of the Chamby Canal, during the season of 1860.

Date.	Name of Vessel.	Master or Owner.	Amount.		Remarks.
			\$	cts.	
1860.					
May 5.....	Boat, no name.....	John Findley.....	.....	40	Damage to Lock No. 4.
" 25.....	Steamer Utica.....	Montgomery, Captain.....	4	00	Bridge No. 6.
June 13.....	Steamer Ida.....	Smith,	12	00	Lock No. 4.
" 27.....	Barge Glasgow	Monarque	15	00	Bridge No. 6.
July 9.....	" Bonsecour	Darpenitgray	5	00	Bridge No. 5.
"	" Delvia.....	Anger	3	00	Bridge No. 4.
" 11.....	Steamer Rose.....	Monarque	8	00	Bridge No. 3.
" 18.....	Barge Zephinew.....	Manger	2	00	Fender Lock No. 7.
Sep. 3.....	Batlean, no name.....	Mastel .....	.....	86	Lock Gate No. 8.
" 22.....	Barge A. H. Gardner.....	Page .....	.....	25	Gangway Lock No. 7.
" 28....	Steamer Atlantic.....	Laroehelle	3	60	Bridge No. 7.
Oct. 23.....	Barge Matilda.....	Chadelaine .....	.....	50	Fender Lock No. 7.
" 26...a.....	" of Steamer Rose.....	Monarque	10	75	Lock No. 4.
" 27.....	" Cashier.....	Billings	2	00	Bridge No. 1.
Nov. 6.....	" Philomene.....	St. Pierre	2	40	Lock No. 6.
" 13.....	Steamer Erie	Alcrow	4	00	Bridge No. 5.
"	Barge St. Rose.....	Monarque	4	00	Lock Gate No. 4.
" 20.....	.....	Thomas Hickey.....	1	20	Done to the Canal Bank.
" 22.....	Antoine Frechette.....	And Narcisse Beausoleil.....	1	70	"
Dec. 1.....	Barge of St. Ida.....	Smith, Captain.....	2	00	Lock Gate No. 6.
			82	66	

(Signed,)

P. T. CHARTIER,
Superintendent.

APPENDIX D.

REPORT FROM THE SUPERINTENDENT, FOR 1860.

LACHINE CANAL OFFICE,
Montreal, 31st December, 1860

SIR,—In compliance with your instructions of the 19th instant, I beg herewith to submit the following Annual Report, on the works under my charge, for the year ending the 31st December, 1860.

BEAUHARNOIS CANAL

The water was shut out of this Canal on the 17th day of March, for the purpose of making the necessary examinations, and repairs, preparatory to its being opened for the season, and refilled on the 14th day of April, but not opened to the trade until the 19th, after which, the navigation was uninterruptedly maintained until the third day of December, when it was permanently closed by ice.

The depth of water has been such, that vessels of nine feet draught, could not pass at all times without interruption.

The various structures connected with this Canal, have been maintained in good order, and under ordinary circumstances, can be maintained at comparatively small expense for another year.

The superstructure of the north pier, at the lower entrance of the Canal, which was lifted by ice during the winter, has been thoroughly repaired, and the inside and end of the pier, faced with oak plank, which, it is thought, will secure it from future damage. The pier at the upper entrance of the Canal, has also been repaired.

The lower gates, broken out of Lock No. 9, in November, 1859, were repaired, and replaced early in the season. Three pairs of new spare lower lock gates were delivered about the end of October, making three pairs of lower, and three pairs of upper spare gates on hand. The upper gates at locks Nos. 8 & 10, are old, repaired gates, which have been in use since the completion of the Canal, and must be removed on the opening of navigation, next spring, which will leave but one pair of spare upper gates; it will therefore, for the safety of the trade, be necessary to provide at least, two new pairs of upper gates for this Canal.

A portion of the walls of locks Nos. 8, 9, 10 and 11, should be pointed next April, and the retaining wall at the lower end of the Lock No. 9, partially rebuilt, and repaired. A large number of the bumping posts are very much decayed, and require renewing.

The Bridges and Waste Weirs on the entire line are in good order, and will require but little more than ordinary repairs.

Two new sews have been built for the Ferries on the long reach, between Locks Nos. 13 and 14. The docking in the North Slip for Ferry No. 2, has also been renewed. The docking for ships at Ferry No. 1, must be rebuilt next season.

The repairing sews, will require overhauling and caulking.

The Canal banks, and slope walls, have been maintained in good order. The west bank, at the Basin below the Guard Lock, should be raised eighteen inches, for a distance of about three quarters of a mile, and some fifty mooring posts renewed.

The culverts and ditches have all been thoroughly cleaned, and are now in an efficient state. The expense of maintaining these ditches forms a very important item in the expenditure for the maintenance of this Canal.

The dams at the head of the Canal have received constant attention; but in consequence of the low water, the repairs have been less than in 1858. The severe gale and storm of the 23rd and 24th of November last, caused extensive damages to the Dyke on

Grande Isle, above the main Dam, and to portions of the Dyke through Hungry Bay. These Dykes must be repaired early in the season, to prevent the river water from flooding the lands, and causing new claims for damages.

The houses furnished for the employés, on this Canal, all require slight repairs. A store for the safe keeping of Canal property, is much required.

The repairs to the wharf and breakwater at Gross Point, should be put under contract at once, and completed before the ice breaks up in the spring. The work can be done in winter much cheaper than at any other season.

The property leased on the line of this Canal, remains the same as reported last year, except that the lessces are all in arrears for the rent, which added to the amount due on the 31st December, 1859, amounts to the large sum of \$4,962. 50.

Detailed statements of the amounts collected for fines and damages, with an estimate of the probable amount required for repairs for the coming season, amounting to \$5,100 and also an estimate of the cost of necessary new works, amounting to \$6,723, will be forwarded herewith.

LACHINE CANAL.

This Canal has been maintained in good order throughout the season, but much difficulty has been experienced in keeping up the levels, particularly during the season of low water. This difficulty arises from the large amount of water used for milling and manufacturing purposes, on the south side of Basin No. 2, at Montreal, which, as near as I can determine, has increased fully one fourth, during the current year.

The water was shut out of the Canal, on the evening of the 31st March, and such repairs made, as were found absolutely necessary, previous to opening it for navigation; the water was again let in the Canal on the evening of the 21st day of April, and opened for navigation on the 23rd and closed for the season on the 5th day of December. During that time the navigation was interrupted forty eight hours, in consequence of the barge No. 12, the property of Glassford, Jones & Co., coming in contact with the Wellington Street Bridge, while passing down the Canal during the storm and gale of Saturday afternoon, the 24th day of November, which unshipped the Bridge, and carried it about 8 feet from its proper position, breaking the step and pivot, and tearing the main roller from its fastenings, without doing the Bridge material injury.

During the short time the water was out of the Canal, in April, the Retaining wall below lock No. 3, was taken down and rebuilt, the locks cleaned, and the gates repaired, the walls of locks Nos. 3 and 4 were grouted and pointed, and a large amount of excavation done in the removal of deposit from the Canal and Basins; but as this deposit had been collecting for years, and had reduced the depth of water to barely nine feet in many portions of the Canal and Basins, it was thought advisable to employ the steam Dredge in its removal. The dredge commenced work in May, and has been profitably employed during the entire season, in the removal of this deposit from the prism of Canal and Basin No. 2, and should be worked for about two or three months more in deepening the Basins, before being removed from this Canal.

The tail race, leading from the large waste weir, near Messrs. Tate's Dry Dock, that was undermined and broken up by the force of the water, in August last, has been thoroughly repaired, and the retaining walls, and bridge abutments substantially rebuilt in cement and lime mortar, and the bridge rebuilt.

The lower gates that were removed from lock No. 2, in the fall of 1859, have been substantially repaired.

The Lock Gates and fixtures, so far as can be discovered, without drawing off the water, are in good working order. There are now three full sets of spare gates on hand, which, it is thought, will be sufficient for any emergency. The chamber walls of lock No. 2, should be pointed. The bumping posts at the upper entrance of all the locks, are very much decayed, and many of them are giving way; some of them can be repaired, but the

largest portion must be renewed. The lower gates in the old Graving Dock at Lock No. 2, have been renewed. The embankments at Locks 1 and 2, have been repaired and gravelled. New watch houses have been built at Locks Nos. 3 and 4, and those at Locks Nos. 1 and 2, repaired and pointed. The gates in the old lock at Lachine, will require repairing, or a new pair furnished; the old gates in use, are so much decayed, that they may at any time give way under the pressure of water.

The waste weirs are in good working order. The large increase in the amount of water now used for milling purposes, renders the necessity for constructing new weirs at Locks Nos. 3 and 4, much greater than at any former period. The large triangular boom at the entrance of the weir at Lachine, has been lengthened some 80 feet, and otherwise improved, which enables vessels to enter the Lock without inconvenience from the current.

The bridges are also in good working order; they have all been painted during the season. A new step and pivot must be furnished for the Wellington Bridge, and the roadway re-planked. The traffic between the City and Point St. Charles is becoming so great, that some steps should be taken for diverting a portion of the travel to the Bridge at Lock No. 2. It is also daily becoming more apparent that a new Bridge must be built for the accommodation of this trade. The Bridge at Lock No. 2 will also require re-planking; new segments will be required at the Montreal and Wellington Bridges.

There is a large waste of water, caused by defects in the Dock wall in front of the mills, on the south side of Basin No. 2; especial care should therefore be taken in grouting and painting it before the commencement of another season's navigation.

The wharves and docks are in good order, and will only require ordinary repairs. The banks at the Wood and Lumber Basins, were nearly destroyed by carts during the wet weather of the past Autumn, and will require immediate attention on the opening of navigation. The trade in wood, lumber, and square timber, is so rapidly increasing, that increased accommodation should be provided by completing St. Gabriel's Basin, as recommended in last year's report.

The banks and slope walls will only require slight repairs.

The extension of the pier above Cote St. Paul Lock, cannot any longer be dispensed with; this extension is required to protect vessels from being drawn into the head of the old Locks, by the strong current formed by the large amount of water passing through them for keeping up the levels below.

The pier extension at Lachine still remains unfinished. Portions of the old wall in this part have been repaired. The stone forming the superstructure of this pier does not stand the action of the water and the frost, and is constantly crumbling and falling out. These repairs now form an important item in the Annual expenditure for maintenance.

Some 2500 lineal feet of the retaining booms for the Timber Basin at Lachine have been completed, and it is expected the remaining 500 feet will be completed on the opening of the navigation. A post and rail fence has also been erected along the north bank of the old Canal, and upper entrance of the supply weir at Lachine.

New dwelling houses should be built for the Lock and Bridge Tenders, and a store house for the safe keeping of Canal property provided.

The facilities for storing grain and flour have been largely increased and brought into use during the year, and still larger accommodations are being provided for 1861. If these improvements are fully completed, it is thought that the present demands for stores and elevators for accommodating that branch of the trade, will be provided.

The carrying trade on the Canal resumed its former activity during the autumn months. The returns show a large increase, both in tonnage and tolls, for the current year.

A statement of the amount collected for fines and damages, and an estimate of the cost of repairs for 1861, amounting to \$9,519, will be forwarded herewith.

CHAMBLY CANAL.

This Canal was opened on the 22nd day of April. On the 27th of the same month navigation was interrupted by a break in the west bank at the culvert above Lock

No. 2., which carried away about 30 feet of the bank. This break was repaired and the Canal again opened on the 4th May, and maintained without further interruption until the 2nd day of December, when it was permanently closed by ice for the season.

The works connected with this Canal have been maintained in good working order. The principal repairs consisting in taking down and rebuilding the lower wing and recess walls at Lock No. 4; rebuilding the upper Gates at Lock No. 2; rebuilding the culvert above Lock No. 2; renewing the wood work of Bridge No. 1; and repairing the abutments of Bridges Nos. 4, 5, 6 & 8. The bank extending into the river above the Guard Lock at St. Johns, has also been raised with stone and gravel for the purpose of raising the water and furnishing a larger supply for the Canal, which afforded great assistance to vessels during the extreme low water of the past season, and saved a large expenditure that must have been incurred in deepening the Canal by dredging.

The Wharf at St. Johns has received slight repairs, and will require much more thorough repairs next year. The Wharf at the Chambly Basin is in good order. A large amount of excavation was done in removing bars and deposits in the bottom of the Canal. This deposit is rapidly increasing and filling the angles at the foot of the inside slopes of the banks, which contracts the channel to such an extent that heavily laden vessels, particularly the large flat-bottomed barges now used over this route, are often detained by grounding on the slopes, causing serious detentions to other vessels, by obstructing the channel. This deposit is partially caused by the surface water flowing into the Canal from the farm ditches, and by the increased number of tug steamers employed on this route. A large expense must necessarily be incurred in the removal of this deposit, and will afford profitable employment for the steam dredge, for the greatest portion of the incoming season.

The mechanical structures on this Canal are very light and easily damaged by vessels striking them, which causes much contention on the part of masters of vessels, who consider it a great hardship to pay the damages caused by their vessels. In order to prevent this as much as possible, and at the same time to protect the structures, guide and wall timbers have been placed at the Bridges and upper entrances of most of the Locks, which has given general satisfaction to masters of vessels. These guide timbers should be strengthened and made more permanent next season. The bye wash at Wood's Creek should also be built.

The Lock and Bridge Tenders are employed during the present winter in repairing the Lock Gates and Bridges, and in strengthening and refitting the guide timbers above mentioned.

The traffic on this Canal is steadily and largely increasing. The revenue for the past season being \$18,842.16, which is an excess of \$2,822.84 over 1859, and of \$7,578.94 over 1858. Its maintenance therefore is of great importance to the trade of the Province.

Detailed statements of the amounts collected for fines and damages during the past season, and an estimate of the probable cost of repairs for 1861, amounting to \$4,467.50, will be forwarded herewith.

ST. OUR'S LOCK AND DAM.

The navigation at this Station commenced on the 4th day of April, and closed on the 5th day of December. During that period the trade was interrupted a few hours, in consequence of the removal of the old, and the insertion of the new Lock Gates, and the removal and adjusting of the friction rollers on the Lower Gates. The Lock is now in good working order. The Gates, or rather that portion of them which stands above surface water, should be painted. The landing piers at the Lock have been maintained in very good order; some portions of the timber however are quite rotten, and will require renewing in order to make them available another year.

172 toises of stone ballast have been used in filling the apron cribs at the west end of the Dam, which were found to be nearly empty, and 61 toises in extending the protec.

tion-wall below the west abutment; 34 toise in protecting the west side of the Island and 10 toise in filling sink holes that had formed above the crib work of the Dam. The walls both above and below the abutments are in good order. A portion of the west side of the Island still requires protection, to prevent it from sliding into the River. On examination, it is found that a large portion of the stone in the apron, or protection cribs, between the centre of the Dam and Island abutment, has disappeared. No satisfactory account can be given for this disappearance. The stones may have been carried away by the force of the current, or sunk through the bottom of the crib into cavities formed by the current. The safety of the structure depends in a great measure on the maintenance of these cribs. The main Dam appears in good order; some slight repairs have also been made on the Lock House.

The estimate of the probable cost of repairs for 1861, amounting to \$2,770, will be forwarded herewith.

ST. ANN'S LOCK.

The navigation was uninterceptedly maintained at this point, from the 21st day of April, until the second day of December. During that time, 3,695 vessels passed through the lock, which is an increase of 440 vessels over 1859. The returns also show a corresponding increase of \$1,039. 05 in the revenue for the current year, the total amount being \$9,687. 02.

A house and office have been built for the Lock Master and Collector.

The superstructure of the south pier, at the lower entrance of the Lock, and 70 feet of the Dock, for supporting the embankments between the Lock and mill race, have been rebuilt.

A new Bridge has also been constructed over the mill race, and the north abutment has been thoroughly repaired.

The ice-breaker at the upper end of the main Dam, was entirely destroyed last spring by the floating ice, and has been substantially rebuilt. Portions of the docking timbers on the river side of the Lock, and face-timbers on the pier above the Lock, have also been renewed.

The remaining portion of the Dock facing the mill race, should be rebuilt next season. A large portion of the timber in the main Dam and docking on the River side of the Lock are very much decayed, but under ordinary circumstances may be kept in repair for another year at small expense.

The old upper Gates have been kept in use during the season, but should be renewed on the opening of navigation in 1861. The old Gates should also be hauled out and stripped, and the new Gates and Bridge over the mill race painted. The Watch-house for the accommodation of the lock labourers, also requires repairing and painting.

The Gates at this Lock are worked by capstains instead of crabs, as on the St. Lawrence Canals, where two Lock labourers do the work. These capstains require four men to do the same labour, and they are often obliged to get assistance from the vessels. By removing these capstans and working the Gates by crabs, it is thought that two men would be sufficient, and this would reduce the annual working expenses about \$420, which in two years would nearly cover the expense of making the change.

A detailed estimate of the necessary repairs, amounting to \$1,640, will be found enclosed.

CARILLON AND GRENVILLE CANALS.

On the close of the navigation in 1859, the wall on the north side of Lock No. 1, at Carillon was taken down, the materials for rebuilding were delivered during the winter, and the wall rebuilt in April, and temporary repairs made to the walls of other Locks.

The old Lock Gates, and sluice frames and gates, were also thoroughly examined and

repaired during the winter, and a large amount of excavation done during the month of April, in removing bars and deposit from the bottom of the Grenville Canal, and the Feeder for the Carillon Canal preparatory to opening them for the season, which was done on Monday the 30th day of April. The navigation was successfully maintained until the 29th day of November, when it was closed.

The repairs during the summer were restricted to such as were found to be absolutely necessary for maintaining the Canal in navigable order. They consisted principally in raising the north River Dam, for supplying water for the Carillon Canal, and in dredging the upper entrance of the Grenville Canal, in raising the banks at a few points, and in repairing the roads and fences.

Notwithstanding the general repairs that have been made to the mechanical structures, it must be borne in mind that they are still old and partially decayed, and that these repairs give only temporary relief. It is however thought that they can be maintained another year at small expense.

The bottom of the Grenville Canal is very much contracted in width, in consequence of the angles at the foot of the inside slopes being filled with deposit, on which vessels frequently ground. The removal of this deposit is therefore of great importance to the trade, and should be commenced as early in the season as the weather will admit. The channel above the Guard Lock at Grenville has been kept in navigable order by the same system of dredging, as was adopted in 1859, which is very slow and expensive, but the channel is so narrow that a dredging-machine could not be worked without entirely suspending navigation. This channel appears to fill up every season during the high water, thus rendering it necessary to resume the dredging as soon as the water recedes sufficiently to admit of it. It is thought however that by constructing a wing dam of crib-work, some 200 feet in length on the south side of this entrance, the water would be raised a few inches and a much larger supply afforded for the Canal, which would be of great service to the trade and afford a harbour for the large fleets of barges employed in this route. For the want of this accommodation these barges on their down trips often fill the channel from the River to the Lock, and greatly impede the flow of water required for floating them through the Canal. Passing places should also be provided between Locks Nos. 10 and 11, where the channel is too narrow for loaded Barges to pass. The towing-path must also be raised and repaired at several points.

These Canals form a very important link in the route between Ottawa City and Whitehall, which is becoming one of great importance, especially to the trade in sawed lumber, which is yearly increasing. The number of vessels that passed through these Canals during the past season, exceeds that of 1859 by 324, and the revenue is increased from \$3,343, to the large sum of \$9,876. This increase in revenue cannot be considered permanent, as a very considerable portion of it has been derived from rafts passing through the Carillon Canal, that would have gone down the slide at Point Fortune, had that work been available during the low water season.

An estimate of the probable cost of necessary repairs for 1861, amounting to \$4,094, will be forwarded herewith.

LIGHT-HOUSES, OTTAWA RIVER.

These Light Houses have been built for the accommodation of the trade between Lachine and Ottawa City. Two of them stand on cribs, viz: at Pointe Claire and Green Shoal, and a Floating Light at Point Valois. These Lights were lit up in October, and, as far as I have been able to learn, give general satisfaction to the trade. During the storm and gale of the 23rd and 24th of November, the stones placed outside of the crib at Pointe Claire, for protecting it from being damaged by ice, were washed down to surface water, which leaves the Light in rather a dangerous position, and renders necessary either

replace the stone, or to sink a small crib at a short distance above the Light, to break the force of the drifting ice in the Spring. I would recommend the construction of the b, as most judicious and likely to afford the greatest protection.

I am, Sir,

Your obed't Servant,

(Signed)

JOHN G. SIPPELL,

Supt. & Engr.

To the

Secretary of Public Works,

Quebec.

APPENDIX E.

REPORT OF THE SUPERINTENDENT OF THE RIDEAU CANAL FOR 1860.

OTTAWA,

January 5, 1861.

SIR,—The navigation of the Rideau Canal commenced on the 1st May last, and was continued, without interruption, during the past season, until the 28th November, when it was closed by frost.

The traffic has been about as usual; the tolls, had they been collected, would have amounted to \$11,212. There has been some falling off in the amount of sawed lumber, and some increase in firewood. The tonnage of vessels, this year, is 181,400, against 71,508, last year. There is not much difference in the quantities of the other items. Firewood is becoming an important item of traffic, and is increasing; this year it amounts to 28,000 cords. A statement of the traffic is appended.

With respect to the state of the works I may mention, that the entrance from the Ottawa River to the combined Locks, at Ottawa, is fast filling up; the saw-dust, slabs, bark, edgings and other refuse, from the saw mills at the Chaudière Falls, is all thrown into the Ottawa River, and this rubbish drifts into the entrance Bay. It has caused considerable labour, to maintain the navigation, during the past season, in raking the stuff out of the lower lock, to enable us to work the gates; and this difficulty seems gradually increasing.

The same thing has occurred at Smith's Falls. The navigation, between this place and old Sly, is much impaired; the steamers, sometimes, stick on the banks of saw-dust. The millers here have, however, been more careful since the new rules were promulgated last spring.

In leasing the water power, on the Canal, as is proposed, some very stringent proviso should be made to prevent this kind of damage to the navigation.

The most important repairs that have been undertaken, during the past season, are as follows, viz. :—At Lower Brewers; taking down and rebuilding a portion of the lower wing walls, repairing the lower mitre-sill, renewing the wood-work of the lock gates, completed at a cost of \$2,305.

At Black Rapids, the upper stone-sill was renewed and rebuilt, together with a portion of the pavement, above the sill; the lower gates were repaired, involving the raising of a coffer dam, and the pumping of eight feet of water out of the Lock, and also the setting of a wooden bulk-head inside the stone-work of the waste weir, which was so old and shaky that it would not retain the stop-logs. The cost of the several repairs, at this station, was upwards of \$2,100. These works, together with sundry smaller repairs, were done before the opening of the navigation.

The Bridge, at Newboro' was renewed during the summer, and by making the approaches of embankment, and the abutments of masonry, the bridging has been contracted one hundred feet—half the length of the old bridge, making the work of a more permanent character, and reducing the cost of maintenance. The cost of the work was \$1,758.

The roadway of the Sappers Bridge, over the Canal, at Ottawa, at the head of the combined Locks, was worn down to the masonry of the arch stones, and the water was running through. This has recently been repaired, by clearing off the mud, and putting on a thick coat of broken stone, at a cost of \$133. The traffic, over this Bridge, is almost incessant in the day-time, and serious injury would soon have been done, if it had not been attended to.

The gates of the basin locks, at Merrickville, have lately been provided with balance-beams; they were formerly opened by chains, attached to the bottom of the gates. These chains and fixings were all worn out, and were becoming troublesome. Nearly all the similar gates, on the Canal, as they required repairs, have been gradually furnished with balance-beams, as they are found to work much better with this arrangement. The wood-work of the waste weir, at the Narrows, was also renewed during the summer, together with several smaller works.

A schedule of the repairs, required to enable us to open the navigation in due time next spring, is appended, and authority should be obtained for the amount, as soon as possible, so that the materials can be procured, and the work done in its proper season. The most important are as follows, viz.:—The wood-work of the lower lock gates at Hartwells, Hogsback, and Edmund Satons, (three pairs of long gates,) requires renewing. These gates are from 20 to 22 years old, and it will be unsafe to trust them another season. The oak timber of which these gates were originally made was of an excellent quality; but this kind of timber, of the size required, is now getting scarce. The experience, on this Canal, shows that gates that have been made from the western oak, do not last so long, by upwards of one-third of the time, as the gates made from lumber grown in this part of the country; but I expect we shall have to substitute rock elm or pine for some of the upper bars of the gates, on account of the scarcity of suitable oak, in this immediate neighbourhood.

An apron to let down the water quietly from the Sluice in the Long Island Dam has been let by tender to Arthur McGaigan and Carroll. It is to be finished by the 1st of April next. The contractors are two carpenters who have been accustomed to the works of the Canal for a considerable period.

The Lower Mitre Sills at upper Brewer's and at Poonamalie, leak very badly. It will be necessary to Cofferdam at each place, and pump the water out of the Locks to see what the trouble is, in the first place, and to make the repairs in the best manner we can afterwards.

The firewood trade has increased so much that there was not room for discharging the cargoes of both firewood and merchandise, on the wharves on the east side of the canal at Ottawa, as usual. I had to issue an order last spring, obliging all the firewood to be landed and discharged on the vacant ground on the westerly side of the Canal. In some places, however, the barges cannot get within ten feet of the shore, and \$200 or \$300 will be required for clearing out the basin, and altering the margin of the bank, so that the landing can be accomplished more conveniently.

The chamber walls of the Locks at Hogsback and Lower Brewers, which were formerly reported as failing, do not appear to be getting any worse. Nearly all the masonry has large joints which require considerable cement, and labour every spring, in pointing and grouting.

The Lock House at Kingston Mills is becoming uninhabitable. This is a wooden house, built by the contractor for his own use, and as it was in tolerable repair when the Lock Houses were built, no Lock House was built at this station. The present house is approached by a bridge about 150 feet long. This bridge is now decayed; a new house ought to be built. There is a good site for one at the road side, near the Swing Bridge.

Between Smith's Falls and Ottawa, a distance of sixty-three miles, this Canal traverses

rich agricultural country, and a considerable portion of the supplies for this city will be furnished from this section, as its necessary requirements may demand.

The several works on the Rideau are now getting to be in tolerably good order, and by making all the repairs of a durable character whenever practicable, it is to be hoped that the working of this canal in future will be as little impeded as it has been during the past year, and that the expenses may be gradually diminished.

I have the honor to be, Sir,

Your obedient Servant,

(Signed)

JAMES D. SLATER,

Supt. Rideau Canal.

J. Trudeau, Esq.,

*Secy. Department Public Works,
Quebec.*

RIDEAU CANAL.
EXPENDITURE FOR THE YEAR 1860.

	\$	cts.
Lockmasters and Lock Laborers.....	11887	28
Establishment, Office, &c.....	4413	39
Incidental Repairs.....	5331	29
Expenditure by Contracts.....	5474	40
Total.....	\$27106	19

RIDEAU CANAL.
SCHEDULE OF REPAIRS REQUIRED FOR 1861.

	\$	cts.
<i>Ottawa.</i>		
For landing place, stop-logs and incidentals.....	361	75
<i>Hartwells.</i>		
For 1 pair gates, gravel for embankment, &c.....	1009	42
<i>Hogsback.</i>		
For 1 pair gates, repairing dam and apron, &c.....	964	70
<i>Long Island.</i>		
For apron for dam, and deepening channel.....	931	80
<i>Burritts Rapids.</i>		
For repair of sluices, walls, machinery and hand-rail.....	334	50
<i>Clowes Quarry.</i>		
For bushing 4 flanges, goosenecks, &c.....	144	00
<i>Nicholson's.</i>		
For repairing gooseneck, connecting-rods, &c.....	20	00
<i>Merrickville.</i>		
For repairing lower sill, bushing 4 flanges, &c.....	212	00
<i>Maitland's.</i>		
For gravel for dam, timber and labor.....	130	10
<i>Edmonds.</i>		
For 1 pair gates, coffer dam and pumping lock, iron work, timber, &c.....	1127	40
<i>Old Sly.</i>		
For new pier, repairs to connecting-rods, &c.....	75	20
<i>Smith's Falls.</i>		
For gravel for dam, timber, labor, &c.....	147	80
<i>Poonamalie.</i>		
For coffer dam and pumping lock, bushing 4 flanges, labour, etc.....	377	40
<i>Narrows.</i>		
For repair of pier	65	90
<i>Isthmus.</i>		
For repair of pier	90	20
<i>Chaffey's.</i>		
For timber and labor.....	51	07
<i>Jones' Falls.</i>		
For gravel, timber, etc.....	115	95
<i>Brewers Upper Mills.</i>		
For 2 coffer dams and pumping lock, bushing 4 flanges, timber and labor.....	628	80
<i>Brewers Lower Mills.</i>		
For bolting and cramping, gravel, etc.....	110	00
<i>Kingston Mills.</i>		
For repairing sluices, pointing and grouting, gravel etc.....	370	92
Total amount estimated for repairs.....	\$7269	51

NEW WORK.

	\$	cts.
New lock-house at Kingston Mills.....	1600	00

(Signed,)

JAMES D. SLATER,
Supt. Rideau Canal.

APPENDIX F.

REPORT OF THE SUPERINTENDENT OF THE OTTAWA WORKS.

OTTAWA WORKS, SUPERINTENDENT'S OFFICE.

Ottawa, 31st Dec., 1860.

SIR,—I have the honor to acknowledge the receipt of your communication of the 19th inst., requesting me to forward to the Department my Annual Report on the state of the Public Works under my charge.

After visiting the different Stations and carefully examining the works, I would respectfully report, that, at the

JOACHIM STATION, which is the highest on the Ottawa, the improvements are in good order, and although they have been in existence about 20 years, the expense of preparing them for next season's business will be comparatively small. The dam, which extends from the North Shore to the head of lower Slide, should be strengthened by the ton of a small support pier on the lower side of the dam. This pier will be 20 x 10 x 10 ft., and the cost of its construction, \$137.80

The ropes for stretching the booms at this Station are much worn and will have to be replaced at a cost of 50.00

\$187.80

THE PETEWAWA WORKS—Consisting of the dams and slides at the first, second, third, Bois-Dur and Crooked Chûtes, with the half mile rapid, and the large retaining boom and piers at the mouth of the river, are in good working order. The Slide-masters will attend to any slight repairs that may be required. The new works on the South branch of the river were used satisfactorily last spring, with the exception of the slide at Brigham's Chûte, which should be extended 80 feet at a cost of about \$160.

CALUMET STATION.—The long slide there has been built nearly 20 years. The foundation timbers on the north side are partially decayed, and have caused about one hundred feet of the bottom of the slide to sink, so that there is a greater depth of water on one side of the Channel than on the other, where the bottom has given way, which is detrimental to the running of cribs. It is somewhat difficult to estimate the cost of the necessary repairs, as a considerable portion of the lower part of the slide will have to be raised by screws, while the foundation timbers are being renewed, but I am of opinion that the work can be done for about \$250.

The other improvement at this station, such as the large boom at the head, support piers, two entrance bulk-heads, the lower slide and the long guard pier at the foot, are in good working order.

MOUNTAIN STATION.—The works there are in good repair and no outlay will be required.

PORTAGE-DU-FORT STATION.—The guide booms, support piers, and long slide, require no repairs.

THE CHENEALX BOOM was only completed last spring, and will be ready for the business of the coming spring, at no greater expense than that of stretching it.

CHATS STATION.—The works there were thoroughly repaired last winter, and no outlay will be required further than the cost of two new aprons. On account of the great velocity with which cribs descend the Chats Slide, the aprons have to be renewed every season. The expense of these aprons will be about \$160.

MADAWASKA RIVER.—Almost all the improvements on this tributary of the Ottawa were carried out prior to 1846, and some of them require extensive repairs. At Chain Rapids the improvements consist of a long retaining boom and a short slide at the lower end. These are situated about 4 miles above the High Falls Station, and at a greater distance from the mouth of the Madawaska than any other Government Works. No repairs will be required.

The two side dams at Bailey's Rapids, and the dams at the Ducks and Boniface Rapids require no repairs.

At the Ragged Chute Station the works consist of long dams, large glance piers, &c. This rapid has been improved with great difficulty, and before the main dam at the head of the High Falls was raised with the view of flooding out the lower end of Ragged Chute, timber was very much damaged in passing. A portion of the long pier on the North side—about 90 feet in length—together with about 30 feet of an adjoining pier, must be removed and rebuilt from the water's edge.

These piers will be 16 feet wide and 8 feet high, and the cost of these repairs, together with those necessary on the wing dams, on the north and south sides of the Chute, will amount to \$1277.60.

AT HIGH FALLS STATION that portion of the long slide between the head and the dam built under the superintendence of Mr. Nagle, a distance of 192 feet, must be renewed. A portion of the lower end of the slide must be replanked and new side timbers for a distance of 500 ft., 3 ft. high, should be furnished. The expense of these repairs will be \$874.14.

These repairs are absolutely necessary to guard against accidents next spring. The large quantities of saw logs that pass through the High Falls slide damage it to much greater extent than square timber does, but when these repairs are executed the work will be perfectly safe.

The three dams in that reach of the river, from the foot of High Falls to the head of Barrett's Chute, as well as the large retaining boom and support piers in Calabogie Lake, require no repairs.

The two support piers at Burnstown will soon be completed by the contractor. It is presumed that Mr. Skead will replace the boom timber that was carried away by the last spring flood.

Having been instructed to repair the dams in the Flat Rapids, I would state that the work is in progress, and will be completed in due time.

At the Arnprior Station, a new apron must be constructed at a cost of \$80.

The Dams and Slide require no further repairs.

Four of the support piers of the retaining boom at the mouth of the Madawaska, and three snubbing piers at the head of the Chats Rapids, have been damaged by the shoving of ice; the cost of repairing them will be about \$200.

The Remous Boom and Piers, the Little Chaudière slide, and the retaining and guide booms and piers at the Great Chaudière Falls are in good working order.

The guide booms between the South Chaudière slides were thoroughly repaired last Fall. About 30 ft. x 25 ft. x 5 in. of the bottom of the first slide must be renewed, and with aprons for the 2nd and 3rd slides, will cost, say \$199.

The 4th slide requires no repairs.

HULL STATION.—The guide booms and piers there are in a good state of repair, but the slide must be re-built. An appropriation has already been made by Parliament, and the work will be proceeded with next summer. In the meantime, the slide will be patched so that it can be used next Spring.

THE GATINEAU BOOM has been thoroughly overhauled and repaired, and a portion of it greatly strengthened. The Contractor will repair the support piers when the ice has formed.

THE CARILLON DAMS have been extended, and the boulders removed from the crib channel, which is 3,700 feet in length. Rafts passed that station in the season of low water after the obstructions had been removed.

The iron girders for the Union Suspension Bridge were received from England so late last fall, that it was found impossible to proceed with the renewal of the superstructure until spring. The materials are all prepared, and the work will be done in its proper season.

The stone coping and bridge towers have been repaired, and the latter painted.

The planking of the line of wooden bridges, which forms one of the approaches to the Suspension Bridge, is much worn, and should be renewed next spring. This will cost \$228.00.

POOLEY'S BRIDGE should be re-planked ; but it appears to me that the Corporation of this city should bear the expense of the repairs. I would therefore suggest that the local authorities be officially requested to provide for the maintenance of Pooley's Bridge.

CHAUDIERE HYDRAULIC WORKS.—The mill owners and occupants of water lots at the Chaudière Falls, having presented a memorial to the Department, setting forth that the supply of water at certain seasons of the year was limited, I was authorised by the Honble. Commissioner to make certain improvements for the purpose of raising the "head" of water. In the month of October, I gravelled the dam, which was built in the year 1854, and built another dam 1,300 feet in length, and am glad to state that there is now an abundant supply of water for the mills.

The quantity of lumber manufactured at the Chaudière mills in 1859, was about 22 millions of feet, board measure, and it was a difficult matter for the mill owners to find space for the boomage of their logs ; but the long dam just built has formed a large sheet of still water which will be a great convenience to the sawed lumber trade.

It is desirable that I should be instructed to proceed with the repairs before mentioned, not later than the 15th day of January, 1861.

In submitting the above, I have the honor to be, Sir,

Your most obedient servant,

(Signed,)

HORACE MERRILL,

Supt. of Ottawa Works

T. Trudeau, Esq.,

Secretary, Public Works,

Quebec.

APPENDIX G.

REPORT OF THE SUPERINTENDENT OF THE ST. MAURICE WORKS, FOR 1860.

SUPERINTENDENT'S OFFICE, ST. MAURICIE WORKS,

Three Rivers, 24th December, 1860

SIR,—I have the honor to transmit, for the information of the Department, the following Report upon the St. Mauricie Works for the year 1860.

In order to show fully the condition of these works, I shall first take the stations severally, shewing the cost of maintenance, and giving such other information as may appear to me to be necessary.

MOUTH OF THE RIVER.—This important station has been operated successfully, the past year, at the cost of \$1250.80. As there were prospects of a large increase of business upon the river in the coming year, and as the Booms here were beginning to decay, I deemed it necessary on the 20th of November to recommend an outlay of \$924.23, in strengthening the works at this station. Such recommendation having received the approval of the Department, the work was put under contract at the prices estimated, and is now in an advanced state.

GRÈS FALLS.—The working of this station for 1860 cost \$255.53. No repairs are here required.

SHAWENEGAN.—Operating this station for 1860 cost \$1886.26. It having been decided that a retaining Boom should be here made, and that the spare Boom at the Grande-Mère should be brought down and used in its construction, it was consequently brought down in November. The water being low, it received considerable damage in going over the Falls of the Grande-Mère and Hêtres, and obliged me to haul it out of the water for repairs. This unforeseen occurrence will add a small amount to the estimated cost of the new Boom.

GRANDE-MÈRE.—The cost of maintaining this station, for 1860, has been \$1237.58. By the contemplated improvements which are now under contract and progressing favorably, nearly all the expense of this place may in future be dispensed with.

LITTLE PILES.—The side pier under contract at this place is nearly completed. The advantages to be derived from the small outlay here required will be very great.

LA TUQUE.—The cost of maintaining La Tuque during the past year has been \$412.65. By the improvements now being made here, the expense of keeping up this station will be entirely done away with.

The total outlay upon the St. Maurice Works during the year ending 30th November, 1860, has been as follows :

Maintenance,	\$6868.53
Repairs,	837.91
Construction,	814.11

The total revenue for 1860, from the St. Maurice Territory, in connection with timber, has been about \$30,000.

The following comparative statement will best show the result of the past year's operations :

MAINTENANCE.		REVENUE FROM SLIDES AND BOOMS.	
Maintenance in 1857,	\$11870.00	Revenue 1857,	\$3397.00
do 1858,	7648.07	do 1858,	2395.40
do 1859,	7234.54	do 1859,	2121.81
do 1860,	6868.53	do 1860,	3079.56

By this statement it will be seen that, notwithstanding the unprecedented flood last spring, which threatened total destruction to the works, and caused considerable additional expense; and that notwithstanding that the La Tuque station was operated during the past year for the first time since 1855, at an expense of \$412.65, yet the establishment for 1860 has cost \$2049.27, or about 23 per cent. less than the average expenditure of the three preceding years, while the revenue has increased \$441.49, or about 17 per cent. over the average for the same period.

Nor is this, I trust, satisfactory condition of affairs, which I have much pleasure in laying before the Department, likely to prove of short duration. While on the one hand a large increase of revenue is anticipated for the coming year, by the judicious expenditure of about £3500, petitioned for by the Lumbermen, and recommended in my report of the 20th September, and subsequently adopted by the Department in improving La Tuque, Little Piles, Grande Mère and Shawenegan, the expenses of the establishment may be further reduced to the extent of \$1500 per year, while greater facilities and security will be afforded to the lumberer.

It may here be remarked that the yearly revenue of \$30,000 is not the only, and probably not the principal, or most important advantage derived by the Government through the instrumentality of the St. Maurice River Works. The extensive sale of Crown Lands, and the encouragement held out to the settler by having a market for his produce at his door, (which has had the effect of rapidly colonizing a large portion of the St. Maurice Territory), may be chiefly attributed to these works.

In my report of last year, I strongly recommended the improvement of certain tributaries of the St. Maurice, and I am still of opinion that were these improvements made the revenue would be materially increased, colonization extended, and the general prosperity of this portion of the country very much advanced.

I have the honor to be, Sir,

Your very obedient Servant.

(Signed)

HENRY R. SYMMES,

Superintendent.

T. Trudeau, Esq.,

*Secretary, Department Public Works,
Quebec.*

APPENDIX H.

REPORT OF ENGINEER.

CEDARS, 31st December, 1860

SIR,—I have the honor to submit, as required, a General Report upon the progress condition, and cost of the various Roads I examined this year, on the North and South shores of the St. Lawrence, below Quebec; also upon the proposed improvements to the Buildings, used for the double purpose of a Jail and Court House, at New Carlisle, and Percé, in the district of Gaspé; for the whole of which detailed Reports, Estimates, and Plans, have been already furnished.

During the course of my inspection, from the 13th of last June, to the 15th of October, I furnished the Superintendents with the requisite Specifications and instructions for the completion, and final location, of the unfinished portions of the works under their charge.

On the South shore, I inspected the Temiscouata, Metapedia, Matane and Cap Chatte, Gaspé, and St. Lawrence Roads; and on the North shore, Malbaie, and Grande Baie Road.

Although the sections of country, traversed by the various routes, are more or less mountainous, they comprise large tracts of land favorable for settlement, well wooded, with a variety of soft and hardwood timber, such as spruce, fir, birch, maple, and especially cedar; watered by numerous lakes, abounding with fish, and several streams with an abundant supply of water-power for milling and manufacturing purposes. The lots adjacent to these routes are taken up and settled as fast as the work progresses.

The Temiscouata, being considered as a Provincial thoroughfare of great importance, is being constructed in a style superior to that of any of the other roads; the object with the latter being to make the cheapest kind that will serve the wants of the locality, and facilitate the transportation of the mails.

With the exception of the Malbaie and Grande Baie, a road of the most inferior description, which is formed and cleared for a breadth of only 12 feet, the other roads are cleared for a breadth of 66 feet, and formed for a width, varying from 16 to 22 feet, between side ditches.

Except in one case, specially reported on, the several works have been managed in a satisfactory manner.

The various roads and their cost, may be described as follows:—

ON THE SOUTH SHORE.

THE TEMISCOUATA.—Inspected in June and October, Joseph Rosa, Superintendent.

This road connects Canada with the North-west portion of New Brunswick, and with the State of Maine, running nearly in the same direction as the projected line of Railway, from Rivière du Loup, 114 miles below Quebec, towards St. Andrews on the Bay of Fundy.

Three fourths of it may be considered either level or undulating, and one fourth hilly, the longest hill being half a mile, (and there is but one of that length), the other hills ranging from 400 to 600 feet in length, with grades of one in fourteen or less.

The work, which was begun by contract in 1856, was discontinued in 1858, and resumed by day-labour in 1859, and 1860.

The Roadway formation is generally good, but the style of construction used in the Bridges, being of too costly a character, has been modified. Out of the 46 bridges required, 33, varying from 8 to 57 feet in length, had been completed.

The quantity and cost of the work done, and remaining to be done, on the 1st October, may be estimated thus:

Number of miles completed, or in progress:—

	Miles.
Say 48 from River du Loup to Lake Temiscouata, 8½ from Dégélé to Province line.....	56½
Remaining to be completed, betwen the Lake, and Dégélé.....	10
Total length when completed to Province line.....	66½

Cost of Work done by contract in 1856–1857, on 37 miles of finished roadway, and 11½ miles of clearing and grubbing:—

Average rate per mile, \$2,225.....\$89,020.83

Cost of Work done by day-labor since 13th October 1859, on 19½ miles, 4 of which are not fully completed: Average rate per mile, \$1,722 31,872.00

Total expenditure.....\$120,892.83

Amount required to complete the work..... 26,267.00

Total probable cost when completed, including \$15,200 for Bridging, \$147,159.83

Average rate per mile \$2,213.....

Balance of appropriation in hand on 1st October..... \$9,276.00

Amount of appropriation required to complete work..... \$16,991.00

The portions of the road, not gravelled, are generally in a bad condition, during wet weather.

As 44 miles out of the 66½, will probably require gravelling, and as gravel is difficult to procure, the cost of the same may be set down at \$480 per mile, or \$21,120 in all.

When the work is completed, a sum of \$200, judiciously expended, will be required each year to maintain the entire line in proper repair, in the event of the gravelling not being done.

THE METAPEDIA;—98¾ miles in length, inspected in July and August, is next in importance to the Temiscouata.

It connects the St. Lawrence at St. Flavien, 200 miles below Quebec, with the Bay des Chaleurs and the North-east portion of New Brunswick; passing, for a considerable extent, a short distance from, or along Major Robinson's projected line of Railway, between Quebec and Halifax, and is intended to supersede the present Kempt Road, which is naught but a continuous passage across mountains, which in winter can be travelled only on a dog sledge, or with snow-shoes.

The new route, which is comparatively level or undulating, and in which the steepest grades scarcely exceed 1 in 10, will, when completed, become the main highway to the Port of Gaspé, and will afford to the numerous population along the Bay des Chaleurs, access in winter, as well as in summer, to the Markets of the Upper St. Lawrence, from which it has been hitherto debarred, and altogether cut off in winter.

The lands along the line, being generally of excellent quality, are being settled by

The total cost of the Matapedia route, when opened throughout, from the St. Lawrence to the Ristigouche, may be estimated as follows, viz:

NORTHERN DIVISION, from St. Lawrence to Lake Matapedia; under superintendence of J. B. Lamontagne.

	Miles.	
Work by contract, begun in 1859.....	33½	\$30,000
SOUTHERN DIVISION , from the Lake to Noble's at the Junction of the Rivers Casapscal and Matapedia, improving present road by avoiding hills.....	27	8,400
SOUTHERN DIVISION , from Noble's to the mouth of the Matapedia, and thence along the Ristigouche, for nearly 5 miles, to James Sillar's; under superintendence of Jean Lefebvre.		
Work by contract, begun in 1859.....	38	56,065
Total probable cost of the entire Matapedia....	98½	\$94,465

However large the sum marked for the Southern Division may appear, it cannot be too small, owing to the rocky nature of the banks of the Matapedia, which it follows for a distance of about 33 miles.

I have no hesitation in saying, that however costly the line of road along the Matapedia may be, it is the only route where a level line can be found; and that to improve the lower end of the Kempt Road in its stead, as some persons suggest, would be a useless and wasteful expenditure of the public money.

On the Northern Division the quantity and cost of the work done, and still required to be done, may be stated thus, viz:

	Miles.
Road completed or in progress.....	8.03
Road already opened through the settlements near the St. Lawrence, to be improved.....	5.00

Number of miles opened.....	13.03
Road through forest, 13½ miles of which to be opened as a winter track in 1861.....	20.72
Total length.....	33.75

Expenditure for work done and in progress, average \$1038 per mile.....	\$8,333.87
Estimated cost of bridging to be done, say 2000 ft. lineal....	6,000.00
Do cost of 25½ miles not under contract.....	15,666.13

Total cost of North Matapedia when fully completed.....	\$30,000.00
Or an average of \$889 per mile.	
Total appropriation authorised to be expended.....	\$8,471.00

Amount of appropriation required to complete the work	\$21,529.00
--	--------------------

On the Southern Division the estimate of quantities and cost on the 1st August, may be enumerated as follows :

	Lin. ft.	Cost.
Bridging completed and in progress.....	1,955	3,368.83
Bridging remaining to be done.....	2,220	4,656.00
Total for bridging.....	4,175	\$7,924.83
Road completed and in progress 4.89 miles below, and 5.84 miles above the mouth of the Mata- pedia River.....	10.73 Miles.	
Expenditure on work done up to 1st August, 1860,		\$17,878.83
Amount required to complete the work in progress by contract and day labour, at the above rate...		3,002.90
Estimated cost of 27½ miles not under contract.....		35,128.40
Total cost of South Matapedia when fully completed		56,065.13
Or an average of \$1480 per mile.		
Total appropriation authorized to be expended.....		\$22,471.50
Amount of appropriation required to complete the work		\$33,593.63

THE MATANNE AND CAPE CHATTE.—Inspected in July; A. Fraser, Superintendent.

This road which is opened throughout to the Public, although in an unfinished state, is the continuation of the main Provincial highway along the Gulf Shore. It extends from the 9th Lot of the Township of St. Denis, 9 miles below Matanne, to the Chapel of Cap Chatte, 285 miles below Quebec, and is 36 miles 6¼ perches, French measurement, in length, inclusive of 1787 feet of bridging.

The works, which were begun in October, 1857, were suspended in December, 1859, the appropriation being then exhausted.

Considering the very hilly nature of the country between the above places, the location of the road leaves but little choice for improvement, except as regards some of the hills.

The first 4 miles eastward from St Denis, and the last 10 miles westward from Cap Chatte, are either level or undulating, on excellent land for settlement, and are already mostly settled. The intermediate portion is on land unfavorable for settlement; near the St. Lawrence, being of a very stony nature, and traverses a series of at least 60 hills, varying from 80 to 800 feet in length, with grades sometimes of 1 in 2, frequently of 1 in 3, and occasionally 1 in 7, or less.

For a common road, one-third of the entire distance is fair, the remainder is very rough, being little more than half formed. Several portions require to be fascined. Culverts, ditching and drains are wanted at several places, and many of the hills require to be reduced or improved.

The worst feature of the road is the steepness of the hills. So long as the roadway across the same remains in its present unfinished state, it will be of little use to the settlers along the line, and to the numerous inhabitants along the 9 miles of road between Cap Chatte and Ste. Anne des Monts, who suffer greatly for the want of this, their only means of land communication, with the rest of the Province.

As to the various bridges, 41 in number, and the quay built along the line, they are generally well built, but not durable, owing to the inferior quality of the timber (var) flooring.

The following is an approximate estimate of the expenditure incurred, and still required at the time of inspection.

Expenditure incurred for contract work, superintendence, &c., including \$4,523 44 for bridging.....	\$19,173.47
Amount required to render the road passable.....	1,741 50
Contingencies	500.00

Probable cost of the Matanne and Cape Chatte Road, when completed, \$21,414.97
Or an average of \$594½ per mile.

THE GASPE AND ST. LAWRENCE.—Inspected in September; Anthony Painchaud, Superintendent.

The above road comprises three main divisions, which are in progress of construction, and form part of the last connecting link, between the mail route of the Bay of Chaleurs, and that along the south coast of the St. Lawrence.

These divisions are as follows, viz:—

- No 1.—From Watering Brook or Peninsula, to Grande Grève, along the north side of the Bay of Gaspé, a distance of 10 miles
No. 2 —From the intersection of the Peninsula Road to Griffin's Cove, or from the Bay of Gaspé to the St. Lawrence, a distance of 7 miles
No 3 —From Griffin's Cove to Great Fox River, along the southern margin of the St. Lawrence, a distance of 6 miles of the above, which give a total distance of 23 miles. 6½ have been completed; 8 were completed this year; 2½ were being done with the Colonization Fund, and 6 remained to be put under contract.

The cost of the work may be detailed as follows, viz:—

Total expenditure incurred for works completed and in progress.....	\$8,745
Amount required to complete the same.....	3,885
Total probable cost of 20½ miles when completed, exclusive of 2½ being done with Colonization Fund, \$12,630	
Deduct former appropriation.....	10,000
Appropriation yet required.....	\$2,630

The expenditure previously incurred, out of the Colonization Fund, on the 23 miles, is said to be about \$1,750 which would increase the total cost, of the above, to \$14,880. or an average of \$625 per mile, when completed.

The Road throughout, being on soil consisting chiefly of sand and gravel, will not be liable to get out of repair.

The Bridges, 40 in number, and of an aggregate length of about 1,700 feet, and the ferries, in most cases, especially along Gaspé Bay, have been constructed with white spruce, cedar having been scarce in the vicinity of the work; in other respects they are quite substantial.

The grades of the various ascents and descents, of which there are 36, of an aggregate length of 3 miles, the longest being about ¼ mile, are, with a few exceptions, being reduced to one in ten.

NORTH SHORE.

THE MALBAIE AND GRANDE BAIE ROAD.—Inspected in October, Paschal Bouchard, Superintendent

The total length of this Road, from the St. Lawrence to the Saguenay, is computed 5 miles. 10½ of which, at the southern terminus, have been made by the inhabitants, 15½ are being made by the Government. This portion, when completed, will comprise bridges, of an aggregate length of 3,545 feet, exclusive of culverts.

The work, which was begun in 1856, was suspended in 1859, and resumed this year; it is being carried on by day labour.

The various appropriations granted for it, amount to \$8,000, out of which \$7,394 were expended up to the 1st of October.

The expenditure, so far, has been chiefly incurred upon 46½ miles, from the 1st Concession of Grande Baie, southward; this section of the route being the most favourable for future settlement.

In the preceding distance are comprised :—

2½ miles	of roadway, near Con. of Grande Baie, ditched, graded, turnpiked.....	18 feet wide.
36½ do.	do. partly grubbed, hoed, and levelled, requiring drainage.....	12 do.
1 do.	do. on side logging destroyed by fire; to be rebuilt.....	12 do.
7 do.	do. opened for use of sleighs in winter,.....	8 do.

—
46½ miles, in all, also 47 bridges, of a total length of 1,559 feet, and 420 feet of paving across morass.

The timber used, in all the wooden structures, consists chiefly of grey and black spruce and var, and, in a few cases, of white pine; cedar being scarce along the line.

The remainder of the route, towards Malbaie, for a distance of 16½ miles, is a winter road of about 8 feet in width, the most of which has been opened by the inhabitants themselves; it comprises the steepest and loftiest hills, some of which will be avoided.

At the northern extremity of the route, there are 2½ miles of road opened, also by the inhabitants, as far as Grande Baie Church; but its location being such that it is next to impracticable, has been altered for the new road.

The amount requisite to complete the work, throughout, with turnpiking and drainage only where most necessary, so as to render it passable for carts in summer, may be estimated at.....	\$8,667.75
The amount already expended on the 46½ miles, is	7,393.96
Or at an average of \$158 nearly per mile.	
The total probable cost of the 65½ miles, when completed, will be.....	16,061.71
Or at an average of \$245.25 per mile.	

This estimate is for a road of the most inferior kind, likely to be frequently obstructed by fallen trees, and difficult to travel over in wet weather, as not more than 4½ miles would be cleared 66 feet wide, with partial turnpiking and drainage.

The road, in its present unfinished state, is passable throughout for sleighs in winter, but not yet practicable for carts in summer.

As it is, no doubt, the intention of the Government ultimately, to construct it on a scale superior to that adopted up to the present moment. I have subjoined three other estimates, for that purpose, viz. :—

Sec 2.—For the thorough turnpiking and drainage of a road 12 ft. wide, cleared 66 ft. wide, for 65 miles, @ \$361 per mile. Total cost when completed.....	\$28,580
Sec 3.—For a similar road, 16 ft. wide, cleared 66 ft., 65½ miles @ \$480 per mile.....	\$31,440
Sec 4.—For a similar road, 18 ft. wide, cleared 66 ft., 65½ miles @ \$540 per mile.....	\$45,370

The balance required to complete the work, in each case, would be

For No. 2.....	\$16,186
For No. 3.....	24,046
For No. 4.....	27,976

Estimate No. 3 would supply the locality with a durable road, of sufficient breadth for the traffic of this section of the country, and should be adopted in preference to the other estimates.

The country traversed by the new road line is more mountainous than that along either of the routes examined on the South Shore.

The first 14 miles from Malbaie, and the last 21 miles from Grande Baie, are more or less fit for settlement, and are already settled for a total distance of 14 miles on the two sections.

The intervening portion, with slight exceptions, is unfit for settlement.

Proceeding northward from the St. Lawrence there are 155 ascents and descents, varying from 100 to 2200 feet in length, of a total length of about 12 miles, the grades of which, in many instances, cannot be reduced to more than 1 in 5 or 7, except at the greatest expense. The natural grades range from 1 in 4 to 1 in 30. There are also 20 lakes of from half a mile to 9 miles long, abounding generally with trout; 4½ miles of low swampy soil, and 16 miles of sand hemmed in by rocky cliffs or studded with boulders.

The features of the country are such, that it is extremely difficult to construct a road, in a direct course, and to avoid the numerous, steep and lofty intervening hills.

The new road which is being constructed with the Colonization Fund, from Grande Baie to St. Urban, a distance of about 66 miles, 18 of which yet remain to be opened, is nearly equal to the Grande Baie and Malbaie Road, so far as regards grades and the features of the country, but inferior to it with respect to the quantity of land fit for settlement.

At 31 miles southward from Grande Baie, a mail route is being opened across a fertile tract of land, about 19 miles in length to the village of L'Anse St. Jean, on the west bank of the Saguenay, where there is a very thriving settlement which owes its development chiefly to the construction of the Malbaie and Grande Baie Road.

PROPOSED ROADS, SOUTH SHORE, FROM ST. ANNE DES MONTS TO FOX RIVER.

In order to complete the connection of the Basin of Gaspé and the main road along the Bay des Chaleurs with the Provincial highway along the St. Lawrence, now terminating at St. Anne des Monts, it will be necessary to construct about 105 miles of road from Great Fox River to the above point, through a very mountainous tract of country.

From the information received, it appears that no road can be constructed along the margin of the river, although there are no less than twelve settlements in the above distance, but these are around various bays or coves isolated from each other by lofty cliffs and precipitous hills stretching out into the water.

The road from Gaspé Bay towards Fox River being on the eve of completion, it is only desirable that the above section of country should be soon explored in order to find best line for the continuation of a highway, the want of which is felt greatly by intending settlers, and the numerous inhabitants on the banks of the St. Lawrence, between Ste.

Anne des Monts and Cap Rosier, where extensive tracts of good land can be found or are already under cultivation, besides several fishing establishments, grist and saw mills.

Estimating the 105 miles, at the lowest average, for such a broken country as that along the line referred to, say \$800 per mile, the cost would probably amount to at least..... \$84,000

To which must be added for bridging the Rivers Ste. Anne des Monts and Cap Chatte, and the other streams and ravines, say..... 10,000

Total,..... \$94,000

independent of the cost of exploration.

GRIFFIN'S COVE TO CAP ROSIER AND THENCE TO SEAL ROCK OR GRANDE GRÈVE.

There are three other divisions of road claiming the attention of Government and extending the first from seven miles from Grande Grève, on the Bay of Gaspé, to Cap Rosier Light House on the St. Lawrence.

The Second, for 5 miles from this point to Seal Rock on the Bay of Gaspé

The Third, for 9 miles from Griffin's Cove to Cap Rosier, along the St. Lawrence

The first and second are tracks passable on foot and on horseback; the third is a winter road nearly 20 feet in width, impassable in summer for carts, being neither stumped nor grubbed, although passing through an almost continual line of settlements.

As it is of importance to connect the Gaspé and St. Lawrence Road with the Light House, the division from Griffin's Cove to Cap Rosier should be constructed the first; the branch from Cap Rosier to Seal Rock, although passing across lofty hills for nearly $1\frac{1}{2}$ mile, might be constructed in preference to that which crosses Cap Ferré, a perpendicular cliff 500 ft. in height, to Grande Grève; this last route which seems to be preferred by the majority of the inhabitants at the two above named localities, would require a large expenditure to render it passable for vehicles along the cliffs where the present track is only 3 feet wide, with a grade of about 1 in 3 for more than 1000 feet upon an inclined plane of solid rock; it is now used as the mail route. With the exception noted above, this first division is superior to the second on Seal Rock division with respect to grade.

The cost of the second and third divisions, in all 14 miles in length, may be estimated at \$600 per mile, or at a total sum of \$8,400.

Respectfully submitted,

G. F. BAILLARGÉ.

T. TRUDEAU, Esq.,

Secretary, Department of Public Works, Quebec.

GENERAL REPORT

OF THE

COMMISSIONER OF PUBLIC WORKS,

FOR THE

YEAR ENDING 31st DECEMBER, 1861:

FURNISHED

In compliance with the provisions of the 28th chapter of the Consolidated Statutes
of Canada, section 24.

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Printed by order of the Legislative Assembly.  
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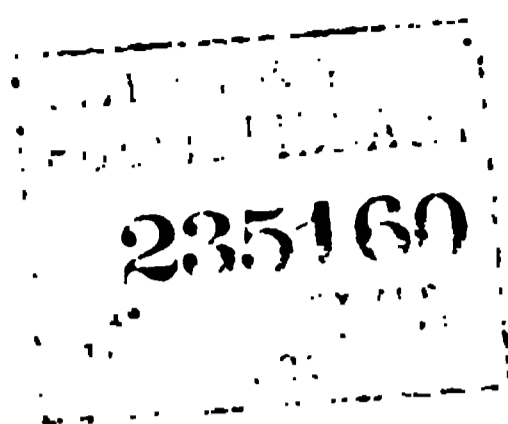


QUEBEC:

PRINTED BY HUNTER, ROSE & LEMIEUX, FOR THE CONTRACTORS, ST. URSULE STREET.
1862.

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*Public Works, 1861
Ann. Rep
J D P*



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R E P O R T

OF THE

COMMISSIONER OF PUBLIC WORKS,

FOR THE YEAR 1861.

*His Excellency the Right Honorable CHARLES STANLEY, Viscount Monck,
Governor General of British North America, &c., &c.*

BY IT PLEASE YOUR EXCELLENCY :

The undersigned Commissioner of Public Works has now the honor to lay before your Excellency his Departmental Report for the the year 1861.

The first care of the undersigned, on assuming office, was to study carefully both the internal and external working of the Department entrusted to him by Your Excellency's predecessor. He found that very considerable pains had been already taken to systematize the accounts and the records of the office. The result obtained is due to the intelligence, skill and persevering industry of the Secretary of the Department, acting under the direction of my predecessor.

One of my officers is now engaged in collecting the titles to the lands and property belonging to the Department, and ascertaining their extent and position. The Department feels the absolute necessity of a general plan, history and description of the several Public Works, and of such detailed explanations of the mode of construction as will enable it to act with all possible facility, promptness and accuracy, and to remedy any accident that may occur, without groping in the dark and in the

curing useless expense, when the assistance of the men who constructed the works, or presided over their construction, can no longer be obtained.

To the preparation of this plan a map of the country on a large scale is absolutely necessary, and such a map has been undertaken and is nearly completed. It was constructed at great expense by the Crown Lands Department between 1855 and 1857; and it is most important, as well with reference to the Public Works as to the defence of the country that it should be completed. The military authorities have already consulted it with advantage.

To make the Department what it ought to be, it is necessary :—

First.—That its records be complete, perfectly classified and perfectly indexed and referred to in books kept for that purpose ;—this work is already done for the years 1859, 1860, 1861, and that portion of the year 1862 which has now elapsed.

Secondly.—That the system of accounts be such that the Commissioner can exercise an unremitting and every day control both over the expenditure and over the action of his subordinates.

Thirdly.—That the Public Works be classed according to their respective nature and character.

Fourthly.—That the officers and services connected with the Department be also classed according to their specialities and nature.

Fifthly.—That all plans of works, before being adopted, be carefully considered and submitted to the joint examination of men who have made such works their peculiar study.

All or nearly all the elements of such an organization exist already in the Department; it only remains to regulate and arrange them, and in this work the undersigned is now earnestly engaged. Up to the present time, the expenses connected with the administration of the Department have been divided into two classes; the one appearing in the Supply Bill, and directly voted by Parliament, while the other is taken out of the appropriations for Public Works. Until very lately there was no fixed rule for the division of that portion of the expenditure taken out of such appropriations, and such expenditure often fell heavily upon slender appropriations, while it was hardly felt by the larger ones, and in works of magnitude.

The undersigned therefore suggests :

1st. That the works be divided into classes, as—the class of canals—the class of booms and slides—the class of harbours and lighthouses—the class of roads and bridges—the class of public buildings, &c., &c., &c.

2nd. That the expenses of administration be divided in the proportion of the cost of each work respectively, as compared with the total cost of all the works. This plan would be most reasonable and satisfactory; but as it is impossible to state beforehand the precise sum to be expended on each work during the then current year, it will be necessary from time to time to make an approximate estimate of the general expenditure, and to keep *suspended* accounts for each work with the Auditor. This plan has been adopted under an arrangement with the Finance Minister and the Board of Audit.

The adoption of a perfect system for keeping the records of the Department will render its action at once more rapid and more certain, to the great advantage both of the public and the Government.

By dividing the Public Works into classes according to their respective nature and character, all the classes being subject to one head and under one central system of control, each class will be under the management of persons who have made it their special study, the risk of its not being entrusted to the proper men will be avoided, the work will be better done, and the responsibility of each officer will be more direct, more certain and more manageable.

By a careful consideration of all plans before they are adopted, and by submitting them to the examination of men specially qualified to report on them, the risk of such miscalculations as have more than once since the Union taken the Department and the Government by surprise, will be to a great extent avoided. Most of these mistakes have no doubt been rather the errors of the system than of individuals. I do not mean that if the system I suggest be adopted, no more errors will be committed;—to say this would be to overrate human ability and to ignore the history of the Public Works in countries like England and France, far more advanced than ours in all respects, and more rich in men who have professionally devoted themselves to particular subjects. What I mean to say is, that by proper order and a reasonable and responsible system, the main sources of error may be avoided.

In order to make the system of accounts more efficient, and thereby to obtain a sure and unremitting control over the expenditure even in its most minute details, as well as over those entrusted with the superintendence of the works, I have thought it right to adopt the following books of account :—

BOOK 1. This book will shew, on the credit side, the sums granted, and on the debit side the works for which they are appropriated.

BOOK 2. In this book will appear, on the credit side, the sum appropriated for each work, and on the debit side the orders in favor of the Engineers.

BOOK 3. This book will contain, on the credit side, the orders last mentioned, and on the debit side the certificates granted by the Engineers.

BOOK 4. This book will shew, in the order of works, on the credit side the certificates of Engineers, and on the debit side the sums paid.

BOOK 5. This book will shew, in the order of names, on the credit side, the certificates of the Engineers, and on the debit side the sums paid.

The two last mentioned books differ from each other only in the headings of the accounts. In the one the account is with works, in the other with persons; and it is understood that in the general balance only one of them will be taken into account. This plan has been adopted in order that the sums paid on each work and to each individual may be seen at a glance; for the same work may be divided among several distinct contractors, and the same individual may have several contracts with the Department for as many distinct works.

The new Board of Arbitration has been in operation since the beginning of the year, and has already decided upon a considerable number of claims; but the new order of things has not been long enough under trial, or the trial itself sufficiently complete, to allow any definite opinion to be formed upon its merits, or its adaptation to the circumstances of the Department and the necessities of the public service.

In view of the financial position of the Province, from the effect of external causes

which we all know and lament, the undersigned feels that the action of the Department should be restricted to those works and to that expenditure which are most urgently and indispensably necessary; but he is bound to say at the same time, that no one can regret more deeply than he does, this temporary stoppage in the progress of our internal improvements and the developement of our national resources.

THE FOLLOWING STATEMENTS ARE APPENDED TO THIS REPORT.

No. 1. Statement of the several Public Works, under the charge of this Department which are in use and yield revenue; showing the expenditure under the different heads during the year 1861, viz: on construction, the amount paid for Land damages, and the total cost of construction *under this Department*, to the 1st January, 1862; together with the cost of repairs and management for the same period.

No. 2. Statement of the Public Works under the charge of this Department incomplete, and as yet unproductive, but on which tolls are to be levied, as soon as they are available,—shewing the expenditure thereon in 1861, on construction, on repairs, and management, and the total expenditure up to 1st January, 1862.

No. 3. Statement of the several Public Works and Buildings in course of construction, under the charge of this Department, yielding no direct revenue, but in use for the Public Service, and authorized by Legislative appropriations, shewing the amount expended thereon during the year 1861, and the total outlay upon them up to the 1st January, 1862. Also, the amount expended in repairs and maintenance for the same period.

No. 4. Statement of expenditure on certain miscellaneous services under this Department during the year 1861.

No. 5. Statement of the expenditure incurred under this Department for repairs and management of the Ordnance Canals for the year 1861.

No. 6. A detailed Statement of the expenditure incurred in repairs and maintenance of the Provincial Light Houses for the year 1861, under this Department.

No. 7. Statement showing the total amount expended, under the Department of Public Works, during the year 1861, as detailed in the foregoing statements, numbered, 1, 2, 3, 4, 5 and 6.

INLAND NAVIGATION.

All the works connected with the inland navigation of the Province being in the immediate charge of this department, it is deemed proper, before entering into particulars concerning each of them, to submit some general remarks concerning the St. Lawrence and Welland canals, which form important links in the great chain of water communication between the West and the Seaboard, and which have to compete with parallel lines through the northern part of the United States.

It is, however, satisfactory to be able to state that the returns shew an increase in the business of the St. Lawrence canals of at least 100 per cent. upon grain, 20 per cent. upon flour, and 8 per cent. on other freight, over that of last year; whilst the number of vessels which passed through the Welland canal exceeded, by 13½ per cent., that of 1860.

But, although it is certain that the Canadian route already possesses great facilities for the safe and expeditious transport of merchandize—facilities which, when more generally known, cannot fail to attract a large portion of the trade; yet there remain some important improvements to be effected, to which the attention of your Excellency is respectfully drawn.

First—With regard to the Welland canal. Although its tonnage capacity is nearly twice that of the Erie canal enlargement, still more than one-third of the steam vessels which navigate the upper lakes are unable to pass through it. The large and profitable class of propellers, which now form the favorite means of transport on lake Erie, cannot descend into lake Ontario.

It is evident, from the fact that all the Railway Companies which compete for the traffic across the Peninsula which divides lakes Erie and Ontario base their calculations of success upon the limited capacity of the water communication, and that the Welland Railway, running alongside the canal in question, has already drawn off a portion of its trade—that the enlargement of the latter is a matter of vital importance towards effecting the object contemplated in its construction.

If vessels of a large class could pass, without breaking bulk, from Chicago to Oswego, or the Sea *via* the St. Lawrence, it is believed that the Welland route could not fail to attract a large amount of the produce which now passes through the Erie canal, and, notwithstanding the prestige in favor of old established lines and the attraction of the great commercial centre of New York, be successful in competing both for the through traffic to Europe, and for the carrying trade of the grain and flour consumed in the North Eastern States.

Second.—Whilst the St. Lawrence canals can pass vessels of double the tonnage capacity of those which can get through the Welland canal, yet, their draught being one foot less, the same vessel which can pass through the latter canal, cannot, without being lightened, pass through the St. Lawrence canals.

It appears, therefore, somewhat anomalous, that a vessel which can navigate the smaller canal, cannot use the larger one; and it is accordingly believed that by increasing the draught of the St. Lawrence canals to that of the Welland, a very serious obstruction to profitable navigation would be removed.

In a return to an Address from the Legislative Assembly, dated the 16th March, 1859, to His Excellency the Governor General, the Chief Engineer of this department estimates the cost of increasing the draught of water in the St. Lawrence canals to 10½ feet on the Mitre Sills of the Locks, at \$1,028,000. It is, however, well worthy of consideration, whether the full benefits of the enlarged capacity of the canals would be realized without, at the same time, increasing the length of the Locks.

Were these improvements effected, there would yet remain to remove some impediments to the navigation of the River itself, which, although presenting such facilities for rapid down transit as to almost rival the speed of railway transportation, is, notwithstanding, in some parts so shallow as only to permit of the passage of vessels of light draught at low water, and could not, consequently, be navigated by the large class of propellers which would probably be employed, were the canals enlarged.

There have been two methods proposed of removing or overcoming these obstacles. The first is by raising the water in the Rapids, where the obstructions occur, by constructing a series of Dams and Piers for that purpose; the cost of which has been estimated at £30,000.

The second consists in deepening the channel by blasting and dredging to a depth of 12 feet generally, and to 13 feet in the most turbulent parts, which has been estimated to cost £180,000. The department, however, is not in possession of sufficient information to give an opinion on either of the modes proposed.

It may here be remarked that the large propeller is a class of vessel well adapted to the navigation of the St. Lawrence route, being under perfect control in the Rapids, and being, in point of speed, the profitable mean between the expensive though faster paddle wheel steamer, and the cheaper, slower, and less manageable sailing vessel. Messrs. Childe, Kirkwood, and McAlpine, in their valuable "Report on the Improvements of the Harbor of Montreal, and on the Trade and Navigation of the St. Lawrence," entertain the following views upon the subject: "The economy with which these vessels are run, combined with the greater celerity and certainty of their voyages, enables them to share with sailing vessels the carriage of the bulky and cheap articles towards tide water; and as their charges are much lower than those of the railway, and their deliveries are as prompt and but little longer, they have rapidly drawn to themselves a large portion of the business which had began to seek the latter; and thus, by generally securing full cargoes in both directions, they have effected a material reduction in the charges of freight both ways."

Although the principal arguments now advanced upon these subjects have been previously urged, and it is difficult to say when the Province may be in position to undertake those works, yet, as it specially appertains to this department to supervise the Provincial works, and as the demand for the projected improvements still exists, it is believed that they cannot be too often nor too strongly brought under the notice of your Excellency and the Legislature.

WELLAND CANAL.

When the enlargement of this canal was decided upon, the depth of water was fixed at 9 feet, and the inferior Locks at 150 feet long with a width of 26½ feet.

Those at the main outlets, together with that near St. Catharines, were decided to be 200 feet long and 45 feet wide.

It was then foreseen that the Grand river would ultimately fail to furnish the requisite supply of water for the canal, and arrangements were therefore made for sinking the bottom of the summit level, so as to feed from lake Erie, and still have a bottom width of 26 feet in deep cuttings.

The enlarged line throughout, by way of the feeder to Port Maitland, was opened in 1847, and that portion of the main canal between the Junction and Port Colborne was then laid dry, in order to admit of the works being proceeded with advantageously.

But the failure of several sets of contractors, and the prevalence of sickness amongst the laborers retarded the operations so much, that this portion of the route was not opened until the summer of 1850. It being then incomplete, as also some of the lower sections, a contract was entered into to complete the work by means of Dredges or Excavators, with an interruption to the navigation. Under this arrangement, the deepening was proceeded with slowly by the contractor until 1854, when he altogether abandoned it.

By this time it had become evident, from the vast increase of traffic and the large class of vessels generally engaged in it, that the dimensions for the canal, previously fixed upon, would be quite inadequate to afford the necessary facilities for the trade. It was, therefore, considered indisputable that its width should be increased sufficiently to admit of two vessels passing each other at any place on the summit level, instead of one of them having to lie by, as originally proposed. The Grand river level being from 7 to 8 feet higher than that of lake Erie, it was also apprehended that, when the water was lowered for the purpose of introducing the latter, the banks, from the peculiar nature of the materials in which the cuttings were made, would be liable to slide, and thus cause obstruction in the channel which no precaution could prevent. It was consequently recommended that the bottom width should be increased to 50 feet generally, from Allamburg onwards, the cost of which was estimated at £79,754 3s. 6d., or \$319,916 60; and, in the Session of 1854, the Legislature granted an appropriation of \$233,360, for that purpose. The execution of the work was subsequently awarded to Mr John Brown, a contractor of great energy and experience, who immediately provided a more powerful class of machinery than any that had previously been used, and also made other important arrangements to facilitate the operations.

Under the contract then entered into, the works have been carried on up to the present time, principally during the season of navigation.

Great difficulty having been experienced for several years in passing the largest class of fully laden vessels through the canal, which, by getting aground, were not only hindering themselves, but frequently caused much detention to others, it was, after full consideration, decided in 1853 to increase the draught of water throughout to 10 feet. This has been generally effected by raising and strengthening the banks.

But, on the summit level between Allamburg and Port Colborne, the greater draught

could only be obtained by excavating to a greater depth, which also led to an increase in the sectional area, to afford the proper width at bottom. This increased the Estimates previously submitted to £103,974 or \$415,896.

It has been found that in dredging to so great a depth (19 feet below the canal surface), where the operations are confined by the passing of vessels, that ridges are unavoidably left in the bottom. By the circular motion of the scoop, and from silt, the side previously excavated to the proper depth becomes raised or filled, so as to render it necessary to excavate about 18 inches below the bottom line, to insure a sufficient depth throughout. This, by creating space for such deposit as is constantly taking place, is of some advantage, but at the same time it considerably augments the outlay. The Superintendent now estimates the cost of obtaining a bottom width of 50 feet, and a depth of canal suited to the level of lake Erie, from Allanburg to Port Colborne, at \$494,815

Of this sum there has been expended..... \$306,500

Leaving a balance to be provided for of..... \$188,315

It is proper to observe that this Estimate is based upon the quantity ascertained by measurement to be taken out to bring the canal through "the deep cut" to the proposed depth—but from the tendency to slide, which had to be encountered during the course of this excavation formerly, there is every reason to fear, that some slides may occur again, before that part of the canal is finally bottomed

The sum required for next season's operations is estimated at \$75,000.

At the rate of progress made during the past year, the whole could be completed in three years. But as the greater part of the material remaining has to be handled twice, or transported to a greater distance in scows, it is believed that a greater length of time may elapse before lake Erie can become the source of supply.

By the report of the Superintendent (appendix B), it will be seen that this work steadily progresses, notwithstanding the interruptions to which it is liable from passing of vessels and from rough weather, which frequently prevent the dumping scows from proceeding to the place where the material is to be spoiled or wasted. The necessity for its completion is every year becoming more apparent, from the failure of the Grand river to furnish the necessary supply.

The Mills at Dunnville, and such others as do not return the water to the canal, have generally to be stopped during the season of low water.

Notwithstanding this, the feeder was for several weeks, last summer, from one to two feet below its proper level.

The Grand river, as its banks have been cleared, has become more liable to sudden and heavy freshets by the quick and uninterrupted discharge of the rain-fall over its drainage area; and the steadiness of the supply is thereby considerably diminished, whilst the constantly increasing wants of the navigation render this failure the more alarming.

The staunching of the Dam at Dunnville, now in progress, will, no doubt, afford a temporary relief; but the deepening of the canal, so as to admit of an unfailing supply from lake Erie, is considered to be the only effectual remedy. The construction of guard gates above the mountain range of locks, referred to in the last report of this department, has

completed in a substantial and satisfactory manner. They will, no doubt, be the means of preventing injury to the works in case of accident to the locks immediately.

A lie-by place for vessels has been excavated above them, and such other arrangements were made as are likely to render these precautionary measures effective. The place at which the water has to be kept to pass the large class of deep laden vessels, and it necessary to strengthen and increase the height of the banks at the weakest point.

This work, being incomplete, must be continued next season, towards which there is a balance of appropriation on hand.

The Superintendent strongly recommends the construction of a trackway on the east side of the canal, between Hurst's and Marlatt's bridges (a distance of nearly a mile), and widening of the channel between these points, as the present trackway on the west side has deep sharp bends in it, into which vessels are driven and detained by strong south-winds.

This improvement is estimated to cost \$18,000 : an outlay which it is considered would be fully warranted by the facilities it would afford to the speedy passage of vessels.

The aqueduct for conveying the water to the Mills at St. Catherine's has been rebuilt. Two sets of spare gates have been prepared to meet casualties, and the works generally have been placed and maintained in a good state of repair.

The navigation was opened on the 8th of April, and lasted for 240 days, including a suspension of three days in October, while replacing three gates knocked out by a vessel, and a partial interruption between the 3rd and 5th of December, caused by ice, which was successfully broken up in a short time.

The cost of repairs in 1861 amounts to.....	\$16,932.11
Do Management.....	39,807.88
Total.....	\$56,739.99

CONSTRUCTION IN 1861.

Widening canal, building guard gates, raising banks, &c.....	\$82,322.66
Superintendent's and other salaries.....	5,100 00
	\$87,422.66

REVENUE COLLECTED IN 1861.

Canal Tolls.....	\$229,769.49
Traut Rents.....	8,967 20
Land Sales, &c.....	25 00
Fines for breaches of canal Regulations, and Damages.....	2,267.80
	\$241,029.49

STAFF EMPLOYED.

Superintendent	1
Assistant Engineer.	1
St. Catherine's Office, Paymaster Clerk....	1
Assistant do	1
Rodman	1
Messenger.....	1
	<hr/>
	6
Lock Keepers	35
Assistant do	39
Bridge Tenders.....	13
Assistant do	11
Ferryman	1
Foremen in charge of repairs	3
Carpenters and laborers.....	30
	<hr/>
Total.....	138

Notwithstanding all that has been done to increase the capabilities of this canal, vessels do not meet with that dispatch in passing through it which the requirements of trade and the competition of other routes urgently demand.

When not detained, vessels can pass from lake to lake in from 24 to 30 hours; but in ordinary cases, it takes from 36 to 48 hours. This delay is attributed by some parties to the inefficiency of the present system of towage, and by others to unavoidable detention in passing the Mountain Locks. The former state that the traction service, although open to any one who can furnish a sufficient number of horses to tow a vessel, has practically fallen into the hands of a few individuals, whose defective arrangements cause delay, while in case of head winds, the usual number of horses are unequal to the service required. They therefore recommend the use of Tug steamers on the long levels, and horses for the short reaches between Thorold and St. Catherine. As stated in the report for 1867, the attention of the local Officers was directed to the subject; after much careful consideration, they reported strongly in favor of the change, and submitted the details on which a contract should be based, principally for the information of such parties as might feel disposed to undertake the service.

Tenders were subsequently invited, and eight received; the rates stated in the lowest of these were less than the tariff established by the parties controlling the present system. But the canal being by this time opened, and the expediency of an immediate change being questioned, no action was taken upon the tenders received.

In December last, a memorial signed by 252 Captains and Masters of vessels was presented, in which favorable opinions are expressed of the present system of towage, and stating that "the whole detention arises from the want of sufficient lockage," and "that the system of Tug-towing has been tried on the Erie canal and abandoned as totally unfit for the purpose. That the amount of risk to vessels passing each other in the canal,

ing to the want of sufficient control over the Tugs when under weigh, would deter persons from using the canal as means of transit."

It is believed that the detention referred to in passing the Locks, is more or less increased when large fleets of vessels arrive at the same time, which is often the case in prevailing winds, and that this is an additional strong argument in favor of constructing a branch line from some point above Thorold, so soon as the finances of the Province permit.

But, although steam tugs may have failed to give satisfaction on the Erie canal, it does not necessarily follow that they are unsuited to one of three times the sectional area. There is very little doubt but that great advantages would be derived from the constant working of a system such as that proposed, where the whole would be under the control of one party, whose interest it would evidently be to expedite the passing of vessels.

But, it is believed, a change of this nature involves so many considerations connected with the working of the canal, and its effect upon the course of trade, that the views of as many interested parties as possible should be obtained in reference to it, before any definite action is taken; as, in the event of a new system being adopted, any oversight or inadequacy in the arrangements, or failure in providing for the certain and efficient performance of the work, might lead to serious difficulties.

WILLIAMSBURG CANALS.

These four canals, referred to in previous Reports under this head, are, by the joining of them, now in three divisions.

The upper one is $7\frac{1}{2}$ miles long, and embraces the Gallops, Junction and Iroquois canal, whose joint rise is 15 feet 9 inches; on it there are two lift locks and a lock.

The next in order, but $4\frac{1}{2}$ miles lower, is Rapide du Plat canal, $2\frac{1}{2}$ miles long, and its rise, on which is a guard and a lift lock.

Jeran's Point canal, about 10 miles lower, is $\frac{1}{2}$ of a mile long, with a lock of 4 feet and an outlet.

Navigation through these canals commenced on the 24th of April, and continued, without interruption, until the 10th of December; except for a few hours in the early part of the season repairing a small breach in the south bank of the Iroquois section of canal, and a sudden rise in the River during a severe westerly storm.

The damage done to the pier at the upper entrance at Gallops, by the same storm, has been repaired. The south or river pier at that place has suffered considerably from the action of the ice during the unusually high water of the past two winters, and must be repaired as the state of the River will permit.

The South Pier at the head of the Rapide du Plat canal is also in a dangerous condition, and requires immediate repairs. The canal banks, where injured by the surf and the passing steamers, have been made up as speedily as the lining of them with stone has proceeded with. Two lineal miles of this work were done during the last season, and in all about $7\frac{1}{2}$ miles of the banks that are now well secured. This kind

of protection should be continued until the whole is completed, which will take about two seasons more, if carried on at the same rate as in past years. Two pairs of new lock gates are under contract for these canals, but another pair will be required this year

The Repairs, including protection of the banks for 1861, cost.....	\$5771. 71
Management, &c.....	5861. 67
Total.....	\$11,533. 38
The annual rental of water power and other property leased amounts to	\$764. 00
Amount collected in 1861	\$538. 00

STAFF EMPLOYED.

Superintendent	1
Paymaster	1
Lock Keepers.....	6
Assistant do	12
Total.....	20

CORNWALL CANAL.

From the Lock at Farran's Point to the upper entrance of the Cornwall canal, a distance of 4½ miles, the river is sufficiently deep for the largest class of vessels; but immediately below the former there is a large bay in which the current is cross, irregular, and very perplexing to those unacquainted with its peculiar action. It is nevertheless quite safe, and can be passed with ease by skilful pilots.

This canal is 11½ miles long, with a rise of 48 feet, which is overcome by 6 lift locks and a guard lock, all of which are 55 feet in width. The upper levels are regulated by means of weirs, but no provision has yet been made in this respect for the Cornwall level.

The stone work of the locks is of a moderately good class, but the mortar in which it was laid has proved a complete failure.

A few years ago, a large portion of the face work was repointed; but, where subject to the pressure of water, the mortar has been again forced out.

The walls above and below the gates, at both ends of the locks, must be well pointed next spring.

The great height of the embankment, and the inferior description of material of which they are composed, necessitate considerable annual outlay, and constant watchfulness to keep them in repair.

In June and July last, about 300 feet of the South bank below Lock 19, settled from 12 to 18 inches; the water at the same time percolating through it at several places. This is supposed to have been the joint result of continued heavy rains in the early part of the season, and the unusual height of the river in February last, caused by an ice shove opposite the Town of Cornwall, which, by softening the banks, increased their tendency to slide.

The water, at the time referred to, was fully 29 feet over its ordinary level. It entered

by Woods creek culvert, near Lock No. 18, and passed 1 foot deep over the canal banks, for a width of about 200 feet. At the same time, the water at the lower entrance of the canal was about 21 feet over its usual height. Although ice jams annually occur at some distance below Cornwall, backing up the water so as to submerge the two lower locks, yet it has seldom, if ever, been known to shove opposite the Town so as to raise the water to the height above mentioned. The inner stone facing of the banks has settled in many places to the level of the water surface. This must be raised next season by additional stone and a number of mooring posts provided and placed at different points along the line.

The wharf at the lower entrance is in such a dilapidated state, that its repair can be no longer delayed.

The superstructure of the wharf at the Town of Cornwall must also be renewed.

Furnishing materials and making the above repair will cost \$2,300.

The Superintendent reports that the wharf at the upper entrance of the canal is in a ruinous condition, and recommends the sinking of cribs in the spaces between those at present standing, and the renewal of the superstructure.

The cost is estimated at \$5,238.

This wharf is principally used by vessels making fast to it when brought down by Tug-boats. Being so near the head of the rapids, it is found to be very useful for this purpose, and a great means of safety. In April, the water was drawn off this canal for the purpose of clearing out the locks and making repairs; on the 24th of that month, it was refilled, and ready for the passage of vessels, and continued in an efficient state until the 12th December, when it was closed for the season.

All the works, with the exceptions above stated, are in good repair. Two pairs of new lock gates are under contract, to be furnished by the opening of navigation, for the purpose of replacing others which are considered to be unsafe.

It will be necessary to provide a pair of spare gates for the guard lock, and a set for one of the other locks during the ensuing season, so as to be prepared for any casualty that may occur to those now in use.

The repairs for 1861 cost.....	\$ 3,524. 47
Management, &c.....	8,874. 71

Total.....	\$12,399. 18
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Annual rental of water power and other property leased.....	\$1380. 00
Collected in 1861.....	\$1140. 00

STAFF EMPLOYED.

Superintendent	1
Collector and Pay Master.....	1
Lockmasters	5
Asst. do.	23
Bridge Tender... ..	1
Light Keeper.....	1
At ordinary repairs.....	2
Total.....	34

The water-power leased on the north side of the canal, below the Town of Cornwall for which head-gates were constructed two years ago, has not yet been brought into use and the power leased at lock No. 20 is only used in part.

It therefore does not appear to be expedient to depart from the practice in force of not incurring any expenditure in the construction of head-gates or other works connected with water power, unless the revenue to be derived shall, at least, meet the interest upon the outlay.

To admit a sufficient supply of water for lockage, and the mill power leased on the third level, it would be necessary to enlarge the weir and supply race at the upper entrance. They are only 33 feet wide, and at low stages of the river there is no "head" on the breast of the weir. To increase their width to 50 feet (the bank on the north side being steep and nearly 30 feet high), would cost \$12,000.

BEAUHARNOIS CANAL.

From Cornwall to the head of the Beauharnois canal, a distance of 40 miles, the channel is good, and well marked out. Since the construction of the dam (in 1849) across the south branch of the river, there has been at all times a sufficient depth of water at the entrance. The canal is 11½ miles long, with a rise of 82½ feet, which is overcome by locks.

There are 9 swing bridges on it, 7 of which are over locks.

The levels throughout are regulated by weirs, but no advantage has been taken of the facilities which they afford for bringing into use any of the water-power, except what is furnished through the dam at the upper entrance.

On the 24th of April, the canal was ready for use, and five days afterwards, vessels succeeded in passing through the ice which had accumulated in the bay at the head. During the season, which closed on the 3rd of December, no interruption to the traffic occurred, except for about 18 hours in October, while hanging new lower gates on lock No. 13, to replace those destroyed by a steamer.

The freshets of last spring and heavy rains during the summer, did considerable damage to the banks, which, from the nature of the materials they are formed of, are liable to slide when softened by the action of water.

This renders not only an annual outlay on the protection walls indispensable, but diminishes the width of the channel, which, from this cause and the accumulation of silt in the bed, had a few years ago to be cleared out by means of a dredge.

The dam at the head, from frequent settlements taking place in it, continues to require constant attention and repairs.

These, together with the protection of the dyke at Grande Isle (one mile long, exposed to the action of the surf), and the dyke through Hungry Bay (nearly 5 miles long, one-third of which is also exposed to the surf) have swelled the outlay for maintenance beyond the sum ordinarily expended for that purpose.

the west bank, below the Guard-lock has been raised and protected for a distance of mile, and next season a similar course must be adopted at low places. The super-
structure of the pier and breakwater at Grosse Point has been substantially rebuilt.

The culverts along the line have been repaired, and the works generally kept in an
a state.

There are 4 pairs of spare lock gates on hand, which, together with the two pairs
contract to be furnished in spring, make three full sets.

But as some of them are old gates repaired, it is proposed to construct, during next
year, one pair for the Guard lock, and a full set for one of the interior locks.

The principal works required this year are: The re-building of the superstructure of
pier at the upper entrance; further repairs to the Dam and Dykes; repairs to
wing and slope walls and bridges; pointing walls of locks; and cleaning outside
a.

All of which are estimated to cost \$7,765.

The cost of Repairs for 1861 amounts to	\$6482. 56
“ Management	9294. 21
Total.....	<u>\$16776. 77</u>

Annual Rental of water power and other property amounts to..... \$1102. 00

Fines collected for breach of Canal Regulations, damages, &c..... 1278. 18

STAFF EMPLOYED.

Superintendent	1
Paymaster.....	1
Lockmasters	9
Assistant do.	20
Bridge Tender.....	1
Ferryman	2
Carpenters	3
Total.....	<u>37</u>

LACHINE CANAL

The channel navigated by vessels between the foot of the Beauharnois and the head
Lachine canals, is about 19 miles long, generally of a good depth; and where its
changes, the places are well marked out by light vessels.

These, together with the extension of the south Pier at Lachine, render the naviga-
tion, and the entrance easy of access.

The canal is about $8\frac{1}{2}$ miles long, with a mean rise of $44\frac{1}{2}$ feet. The two lower
locks and the basin between them are adapted to vessels drawing 16 feet water; and
the upper locks (like those on the other Canals) have nine feet water on the sills.

On the second basin above the outlet, which is from 20 to 22 feet over the usual summer level of the river, surplus water, sufficient to drive 65 runs of mill stones, has been leased, the greater part of which is in use. These leases, however, neither give the sectional area of the volume of water, nor the measure of power applicable to a run of stone.

This omission has led to the consumption of such a large quantity of water, as has already interfered, and threatens still further seriously to interfere, with the efficiency of the canal, as the lessees persist in using, and contend that they have a right to use sufficient water to propel the number of mill stones stated in their leases, irrespective of the volume "of water or power required for that purpose."

On the other hand, it has been urged that, as the original calculation on which the water-power was leased, was based upon ten effective horse-power, as the maximum for a run of stones, the lessees are not entitled to more.

These conflicting opinions have led to inquiries being made in regard to the course adopted at other places similarly situated.

The result of which, so far, is inconclusive; beyond the fact that interested parties consider the power required for a run of stones in an ordinary grist mill, is not sufficient to drive a run of stones at a velocity and power suited to a modern merchant mill, such as those now in use at Montreal.

The right of using the surplus water passing lock No. 3 was, in 1851, leased to a Company. Prior to that time, the available power appears to have been estimated as equal to thirty-six runs of mill stones, of ten horse-power each.

It was considered that to furnish this supply, together with that which would be required for ordinary lockage, would produce a current of three-quarters of a mile per hour in the narrowest part of the canal.

The lessees have, from time to time, subleased water for nearly triple the number of runs of stone above stated; 83 runs of which (or machinery requiring an equal power) are in full operation.

To supply this demand for water produces a current of from two to two and a-half miles per hour in the narrowest part of the canal, and draw down the level above lock No. 4 from 10 to 12 inches, making the surface declivity between that place and Lachine about two inches to the mile.

Throughout the season of navigation, the reach between locks 3 and 4 can seldom be maintained at its proper height. To shew the serious detention to the navigation arising from this cause, a statement of the number of vessels detained at the C6te St. Paul Lock, during the past year, is subjoined.

1861.

Month.	No.	Maximum detention.	Average detention.	Remarks
May	35	3.40	2.49	
June.....	67	3.10	2 08	
July	29	2.10	1.10	
August.....	111	3.10	1.52	
September	38	1.80	1.10	
October	141	6 35	3.04	34 detained over five hours.
November	109	6 45	3 30	25 " "
	530			

These difficulties will be, to some extent lessened, but not removed, on the completion of the works now in progress; the only effectual remedy being strict economy of the water by the use of a better class of flumes and limiting the openings through which the water is supplied to the wheels and also the outlets from them, or establishing some definite measure of power. Unless some effective means be adopted to remove this impediment to the navigation, the facilities which the trade demands for the speedy passage of vessels of full draught cannot possibly be afforded.

The great current created in the canal brings with it much silt, which, at many places, forms bars and shoals in the channel, which have annually to be removed.

For the past two years, a steam dredge has been constantly employed at this class of work; yet such is the rapidity with which the deposit accumulates, that several places, dredged below the ordinary depth in 1861, must be again cleared out next season.

The dredge is now being thoroughly repaired, and will be ready for use by spring, when the further clearing out of the channel will be proceeded with. This, it is believed, will occupy the greater part of the summer.

In April last, it having been clearly shewn that the quantity of grain and flour likely to arrive at Montreal during the season would greatly exceed that of any former year, it was therefore decided that 13680 square feet of additional shed accommodation should be provided for that important branch of the trade. This, together with the flour sheds previously built, give an area of 40,280 square feet, exclusively set apart for that service.

On the 24th day of April, the canal was throughout at navigable height, and continued (until the season closed on the 4th December,) in an efficient state, except from the interruptions caused by low water referred to above.

Vessels having been frequently forced out of the channel by the great indraught of water at the upper entrance of lock No 4, a pier in detached pieces has been built obliquely to the line of canal, which has, in a measure, removed the difficulty.

The south pier at Lachine has been thoroughly repaired, but the upper end of it, owing to the continued high water, is still in an unfinished state.

The booms between the channel and the timber basin at Lachine have been completed, and were in use during the season.

The principal works of repair required this year are :—The replanking of part of the wharves and flour sheds; repairs to waste weirs; renewing the floors and stringers of the two lower swing bridges, and repairing the others; pointing walls of lock No 2, and the south dock walls; repairing slope walls and banks; all of which is estimated to cost \$9,420.

Locks Nos 3 and 4 have been so badly built, that the water passes freely through the walls. In some places, the mortar has been completely washed out from the beds and joints, and several of the face stones have been already displaced.

From the pressure of the water and action of frost, the walls are constantly becoming worse; and as they can now be only temporarily repaired, it is evident that within a few years they must be entirely rebuilt.

The contractors for the enlargement of the "Rock Cut" having, in the summer and fall, provided the necessary plant, and done such portions of the work as could be got at when the canal was in use, were enabled to employ a large force on the excavation shortly after the water was drawn off in December last. The works continue to be carried on vigorously and from the progress made, there is every reason to believe that they will be completed in good season for an early opening of the navigation.

Plans and specifications for regulating Weirs at locks Nos 3 and 4 having been duly prepared, tenders were invited by public notice, and 15 were received; but the aggregate cost of both works considerably exceeded the amount applicable for that purpose.

It was therefore decided to proceed with one of them only, until a further grant could be obtained.

The most pressing, although least expensive of the two, being that at Cote St. Paul lock, it was declared to George Neilson of Belleville, and a contract entered into with him for its completion by the 20th day of May next.

This weir will be capable of passing all the water supply which the means of admission at Lachine affords.

It is however to be presumed that all the advantages to be derived from the enlargement of the "Rock Cut" to 100 feet bottom width and the construction of this regulating weir, will be, as far as practicable, confined to the navigation, and will form no pretext for the present inordinate consumption of water for milling purposes; still less for increasing it.

The erection of a store house for canal property, and the providing suitable houses for bridge and lock keepers, to which attention has been heretofore so frequently drawn, has not yet been done.

The repairs for 1861 cost	\$10,752.81
Management..... ..	12,277.46
	<hr/>
	\$23.030.27
	<hr/>

Annual rental of water power and other property amounts to	\$13,076
Collected in 1861.....	17,570.00
Fines collected for breach of canal regu- lations, damages, &c.,.....	626,70
	<hr/>

STAFF EMPLOYED.

Superintendent, Clerk and Store-keeper.....	3
Lock keepers and assistants..... ..	21
Bridge do do do	7
Boom keeper.....	1
Ordinary repairs.....	6
	<hr/>
Total.....	38
	<hr/>

CHAMBLY CANAL.

This canal is 12 miles long, from its outlet on the Chamby basin to its upper entrance. has a rise of 74 feet, which is overcome by 9 locks. These were built 122 feet long and feet wide, but the action of frost and other causes have reduced the width to barely feet. The depth of water on the lock sills, and generally throughout the centre of channel, is 7 feet; but the constant accumulation of silt and the occurrence of slides reduced the depth and width, so that the square bottomed vessels in use upon this cannot pass if they draw more than 6½ feet water. The canal is, therefore, practically limited to vessels 114 feet long, 23 feet width of beam, and 6½ feet draught. It is believed that these slides and shoals could be removed to better advantage by a dredging line during summer, than by hand labour in the spring, when there is so much surface ice to contend with.

The sudden thaws of last winter, and rapid discharge of creeks in the canal, considerably endangered the banks, which were sometimes overflowed in a single night, rendering unusual expenditure necessary to ensure their safety. A bye-wash has been constructed at Wood's creek, so that the water now passes into the river, instead of being as formerly, to flow into the canal. There are 8 swing bridges on the line, one of which is private property, and is maintained by the owner.

The navigation was opened on the 25th April, and closed on the 3rd December.

During this period two accidents occurred, each of which caused a detention of two days. The first took place in the early part of September, by a barge injuring the gates of the lower entrance lock, so much as to necessitate their being at once replaced. The second delay was caused by the hull of an old dredge sinking in lock No. 5.

While the trade of the St. Lawrence canals shews a large increase for the season of 1861, that of this canal has decreased in a corresponding ratio.

This is attributed to the unsettled state of the lumber market in the United States, from which its revenue has hitherto been principally derived.

A pair of new lock gates and a landing wharf were built last winter, and another pair of gates are now in progress. These works are done chiefly by the lock and bridge tenders, under the direction of the local Superintendent.

The Locks are, generally, in a much better condition than they were a few years ago, the most defective parts of a number of them having been rebuilt; but the upper wing and recess walls of locks No. 1 and 7 are still in an insecure state.

The principal works required this year consist of repairs to bridges and wharve protections of banks, clearing out locks and removing bars from channel; also supplying two pairs of new gates, all of which

Is estimated to cost.....	\$6,820.00
The repairs for 1861 cost.....	6,351.99
“ Management.....	6,124.82
Annual rental of canal property leased	133.00
Fines collected for breach of canal regulations and damages.....	201.91

STAFF EMPLOYED.

Superintendent.....	1
Lock and Bridge Keepers.....	16
Total.....	17

ST. OURS LOCK AND DAM.

These works are situated about 13 miles above the junction of the river Richelieu with the St. Lawrence, and 33 miles below the outlet of the Chambly canal, between which points there is slack water navigation of a minimum depth of 7 feet at the lowest stages of the river.

The Lock is 200 feet long and 45 feet wide, with a lift varying from 5 to 7 feet and upwards, according to the pitch of the river.

The dam is about 650 feet long, constructed of crib-work, of a height that admits of a constant flow of water; and during freshets, there is frequently a depth of from 8 to 10 feet passing over it—the re-action of which has repeatedly formed large holes in the bed of the river, and caused such land slips at both ends of the dam as to seriously endanger the structure.

These have been from time to time made good; but from the unreliable nature of the

on both sides of the river and also the bottom, the dam still continues to require attention and frequent repairs.

Navigaton by this route opened on the 16th of April, and closed on the 3rd of October.

The damages caused by the high water of last spring, were repaired during the season, the anchor cribs (which afford the means of approach to the dam) raised. 170 toises of stone have been used in filling the apron cribs and protecting the west side of the Island; the unusually high water prevented the work from being completed.

The principal repairs required next season are: the renewal of the upper parts of the piers above and below the lock, which are so much decayed that they can no longer be relied upon to resist the shock of vessels or the action of the ice; filling the apron and part of the dam with stone,

Estimated to cost	\$2950.00
The repairs for 1861 cost	1734 94
The management.....	1219.20

STAFF EMPLOYED.

Dam and Lock-keeper	1
Assistants.....	2
	—
Total	3

ST. ANNE'S LOCK AND DAM.

The navigation of the Ottawa river, at this point, has been much improved during the few years, by the deepening and straightening of the channel through a shoal of stones immediately above the lock, and the removal of obstructions at the lower entrance. Vessels drawing $5\frac{1}{2}$ feet of water, can now pass at ordinary low water; but at its lowest stages, the set of the current renders it difficult to enter the lock from below.

This was increased, if not created, by the direction of the piers placed in the river for the Grand Trunk Railway Bridge; and, although this evil has been to some extent lessened by the Company extending the landward pier at the lower entrance, it is believed that an effectual remedy would be to sink a line of cribs on the south side of the main pier immediately above the bridge pier, so as to give the current a direction parallel to the entrance of the lock, instead of towards it as at present.

The Lock is 190 feet long and 45 feet wide, with a lift of $3\frac{1}{2}$ feet.

Between extreme high and low water at this place, for the past 10 years there has been an elevation of 9 feet 5 inches (See appendix I Statement No. 12.)

On the 27th of April, the lock was ready for use, and continued in an efficient state until it was closed on the 2nd of December. The unusually high water of May last raised the water 10 to 12 inches over the wing dam above the lock, and did considerable damage to the works, which have since been repaired. The docking on the river side of the lock and on the north side of the channel, has also been renewed.

New upper gates have been put in the lock, and the capstans formerly used for moving the gates have been replaced by crabs similar to those on the St. Lawrence canals, which, besides being more easily maintained, save \$420 annually in the working expenses.

The works, generally, are in good condition, and will require only ordinary repairs next season. It is, however, desirable that the superstructure of the guide piers on the shoal, about a mile below the lock, should be renewed and filled with stone.

This, with the usual repairs, will cost \$915.

The repairs for 1861 cost.....\$1205 04

The management 507 70

STAFF EMPLOYED.

Lock-keeper and assistants..... 3

CARILLON AND GRENVILLE CANALS.

These canals, when transferred to the management of this department, were found to be in a very inefficient state. The greater number of the structures were much out of repair, and some of them in an almost ruinous condition.

In some cases the entrances were obstructed by bars, and the channel at many places was shoal.

Although much has been done since that time (1856) towards placing them in a better condition, it has been confined to works indispensable in keeping the canals at all navigable,—such as the removal of deposit, bars, and other obstructions, and rebuilding the chamber walls of the outlet lock at Carillon, which shewed every indication of failing.

From the irregular dimensions of the locks, and the faulty location of the Carillon section of canal, it has been deemed inexpedient to recommend any large expenditure upon them, until the scale suited to the Ottawa navigation shall have been determined.

The following table shows the length of the respective Canals, dimensions of the locks, &c. :—

Canal and River.	Length of canal in miles.	Number of locks.	Lockage in feet.	Length of locks in feet.	Width of locks in feet.	Bottom width of canal in feet.
Carillon canal.....	2.9	2 up 1 down	22 } 13 }	128	32½	18 to 40
3.65 miles to Châte aux Blondeaux...	0.16	1	3 5-6	128	33½	37
1 mile to foot of Grenville canal...	5.78 }	4 3	32½ 13½	{ 131½ to 129½ 166½ to 108½	{ 32½ to 32½ 19½ to 19½	{ 15 to 36
	8.30	11	85 5-6			

it will be seen that the capacity of the locks is limited to 106½ feet in length, and 12 feet in width, while the draught of water is barely five feet.

The upper reach of the Carillon section (fed from the North River) is 13 feet over the level of the Ottawa at its upper entrance, and 23 feet over it at the outlet; and a great deal of lockage may be said to be lost, while the navigation in August and September is frequently impeded by the inadequate supply of water.

Notwithstanding these drawbacks, and the limited scale of the navigation, its maintenance is of much importance to the Ottawa trade; and what is of still greater consequence, it is a connecting link of the interior water communication between Montreal and the West, which it is desirable should not be interrupted.

On the 3rd May, the canals were ready for use, and continued in a serviceable state until the season closed, on the 29th of November last. Last spring, three passing places were cleared in the narrowest portion of the Grenville canal, and the bottom cleared out at the shallowest places. The dam at the North River was raised and strengthened, and the banks made up and protected.

The channel at the head of the Grenville canal has been deepened, and such repairs made to the lock gates and other works as were absolutely required.

The principal repairs required this year are: The clearing out the canal bottoms; and protecting the banks; a continuation of deepening the upper entrance at Grenville; repairs of locks and gates, &c.

of which are estimated to cost \$3600.

The lock gates are all old, and some of them so much decayed that they may sometimes be required when most required.

As there being no spare gates on the line, it is advisable that three spare sets should be procured as early as possible, viz.: One set for the Carillon canal; one set for the large, and one set for the small locks on the Grenville canal.

The cost of which is estimated at \$5500.

Repairs for 1861 cost	\$3212 30
Management, &c.....	4104 20
	<hr/>
	\$7316 50

Added for fines, breach of canal regulations, and damages	\$32 00
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STAFF EMPLOYED.

Superintendent.....	1
Lock-keepers	7
Aast. do	8
	<hr/>
Total.....	16

(Superintending Engineer's report, See Appendix C.)

RIDEAU CANAL.

Whilst the lower divisions of the "Ottawa canals" were found to be in the condition described at the time of their transfer to the Province, that of the Rideau canal was no less insecure. From the number and magnitude of the structures upon it, and their exposure to sudden freshets, a great outlay was rendered necessary to maintain them so as to keep the navigation open. The gates of many of the locks were rotten or worn out, and no provision made for their renewal, or for spare gates in case of accident.

The sluices allowed the water to escape freely, and were generally in such bad order as to lead to frequent breakage of the machinery for working them. Several of the lock sills had also given way, and others were shattered and broken.

Many of the waste weirs were out of repair, and the banks at exposed points quite unprotected. The walls of some of the locks were in a ruinous state, especially one at Hogs back, and another at Brewer's lower Mills.

Several of the dams were out of repair, and two of them, in particular, were in a very bad condition.

This canal is supplied from a series of lakes, the upper one of which (Rideau lake) is about 292 feet above the ordinary level of the Ottawa River where the canal joins it, and the outlet of the lake is at the Narrows (where there is a lock), about 83½ miles from Ottawa.

In this distance, there are 7 stone dams, varying from 200 to 518 feet in length, and from 5 to 29 feet in height; and 11 wooden and clay dams (cross and longitudinal), varying from 108 to 1616 feet in length, and from 6 to 45 feet in height.

There are 8 combined locks at Ottawa, 2 at Hartwells, 3 at Long Island, 3 at Smith's Falls, and 17 detached locks at different other places; in all 33 between Ottawa and the summit level.

Between these points, there are 16 waste and regulating weirs, 6 of which are of stone, and an aggregate of fully 6 miles of canal in thorough cutting, exclusive of the Lock sections.

The first lock down towards Kingston is 4 miles from the Narrows, and about 39½ miles from the outlet at Kingston Mills. At the latter place, there are 3 combined locks, 2 at Brewer's Mills, and 3 at Jones' Falls, together with 6 detached locks at different points; in all 14, with an aggregate lockage of about 164 feet down to the Cataraqui river or the level of lake Ontario.

In this distance, there are 4 stone dams of 130 to 300 feet in length, and from 16 to 60 feet in height, and 2 wooden and clay dams.

The length of canal in thorough cutting is 2½ miles, and on this end of the line there are 8 waste and regulating weirs, 3 of which are built of stone.

The locks are 134 feet long and 32 feet wide, with a depth of 5½ feet water on the mitre sills.

The maximum draught of vessels which can pass through the canal is, however, only 5 feet.

There are 23 stations on the line, at each of which is a house for the lock-keeper.— There are also 9 bridges, 8 of wood and one (the Sapper's Bridge at Ottawa) of stone.

By contrasting the comparatively short sections of canal with the long intervening spaces of improved river and lake navigation, and upon observing the irregularities of country in which they are situated, it is evident that the mode of construction adopted upon the erection of dams at all rapids and falls, so as to convert the rivers and lakes into successive steps of still water

This, although, no doubt, more economical in point of original outlay, entails a heavy expense in properly controlling the immense bodies of water thus collected and maintained in extensive and isolated works, the failure of any one of which cannot be remedied without incurring a correspondingly large expenditure.

In the month of June, 1858, a dam and weir at Long Island was swept away by a very freshet, which it took fully two months to rebuild, and cost \$20,667 41.

The works which then failed were the third that had been constructed at that place since the canal was first opened.

Navigation opened on the 1st May last, and closed on the 29th of November.

The unusually heavy fall of snow, last winter, rendered many precautions necessary to guard against damage from the high water which, it was evident, would occur in Spring.

A dam was accordingly constructed near the head of Long Island, through part of the main channel so as to force the water down on the west side of the Island, instead of allowing it to pass on the side where the principal works are situated.

Notwithstanding that the freshet was the heaviest experienced for upwards of 15 years it passed off without any other serious casualty than a breach in one of the embankments at Burrutt's Rapids, which was made good without interrupting the passage of vessels, and cost about \$5000.

For the further security of the dam at Long Island, an apron was built below it, which cost \$943 95.

On the 3rd of August last, the east wall of the lock at Brewer's lower Mills failed, from that date until the close of the season, no vessel passed this point.

But by the construction of coffer dams at both ends of the lock, the navigation above and below it was maintained, and the cargo of one vessel transported to another by a short stage.

This obstruction, however, caused a considerable increase in the price of firewood in the season, which is generally supplied with fuel of that kind by way of this canal, the price last year being about 30,000 cords.

The failure referred to was, for many years, anticipated, and led to several plans being proposed to prevent it but without success.

The damage was occasioned by water finding its way through the floor of the lock, and washing the material from under the walls, which consisted of a porous clay and quick sand resting on a bed of granite of very irregular surface.

The damage has been effectually repaired by rebuilding the wall upon a concrete foundation averaging five feet in depth, and supplying the necessary headers which were wanting in the masonry of the old wall. Rows of sheet piles were also driven around and across the lock, to cut off the water.

The chamber floor has been renewed, and the west wall, which also shewed symptoms of decay, is properly secured.

The continuation of wet, unfavorable weather prevented the work from being completed before the 9th of November, notwithstanding which, the outlay was much less than at first anticipated.

The trade on this canal has decreased materially during the past year, owing to the failure of the lumber market in the United States. The aggregate tolls, had they been collected, would have been 11 per cent. less than those of the preceding year.

No very large repairs are required this year, but more or less are wanted at every station on the line, the cost of which is estimated at \$6,318.67.

The ordinary repairs for 1861 cost.....\$4617.59

Repairs to lock at Brewers lower Mills: \$7500, paid on

31st December..... 6155.12

—————
\$10772.71

Management..... 16990.46

—————
\$27763.17

STAFF EMPLOYED.

Superintendent, Clerk, and Messenger..... 3

Lock Keepers and assistants..... 66

Bridge and River Keepers..... 2

Foreman of ordinary repairs..... 1

—————
Total..... 72

For Superintendent's Report, see Appendix D.

BURLINGTON BAY CANAL.

Within the past few years, considerable improvements have been made in the navigation at this point, by which the canal has been made more safe and easier of access. These consist principally in extending the south-west pier further into the main lake, and the north-west pier into the inner lake, and the erection of a stone light-house at the entrance; the renewal of the superstructure of both piers which form the sides of the canal, and the construction of a break-water in front of the light-house, to prevent the surf from washing sand into the channel. From 1st January, 1854, to 1st January, 1861, there has been expended on these works\$79855.38

And in 1861..... 8362.25

—————
\$87217.63

Balance of appropriation unexpended \$6731.95

The whole of the works above referred to having been executed in a substantial manner, the canal is now in a thoroughly efficient state, and likely to continue so for several years, without much expenditure on repairs,—casualties excepted.

These works are estimated to cost \$1700.

WATER WORKS, AND INLAND NAVIGATION, NEWCASTLE DISTRICT.

All the works constructed for the purpose of facilitating the safe descent of timber between Heeley's Falls and the Nine Mile Rapids, on the River Trent, were, in 1855, transferred to a company of persons engaged in the lumber trade.

This company is invested with the power of collecting tolls or slidage dues (not exceeding the rates previously charged by the Government), and are bound to apply them towards keeping the different structures referred to in repair.

But they are not bound to renew the works in case of failure from decay of their materials, their destruction by flood, fire, or any other cause.

Agreeably to this arrangement, the various works entrusted to the company have been, for the past six years, kept in a moderately good condition without expense to the public.

It has, however, been represented to the department, that the dams at Heeley's Falls and Chesholm's Rapids are now in such an unsafe condition, that no dependence can be placed on their stability for any length of time.

It is further stated that the revenue derived from slidage, although sufficient to effect ordinary repairs, is quite inadequate to meet the expense of renewing the dams, the cost of which is estimated by the chief engineer at about \$6000.

Since the transfer of the works, the area of lumbering operations has been greatly extended by the formation of slides on the upper part of the river; consequently, large tracts of timber limits have been disposed of, and a considerable quantity of land sold to actual settlers, in the Townships recently surveyed in that section of the country.

In 1861, about five millions of feet of timber were got out on the river and its tributaries, and for several years to come, still larger quantities might be obtained without exhausting the supply. In order that this timber may find a market, it must descend by means of the improvements referred to.

The various works connected with what is termed the inland navigation of the Newcastle District, from Crooks Rapids, on the Trent, to Trenton Falls, continue to be maintained by the Government. The dam at Crooks Rapids, which is the lowest of the series, maintains the waters of Rice Lake and the Otonabee River at a navigable depth for a distance of 3½ miles, to Whitlas Rapids, 1½ miles below the Town of Peterborough.

Considerable damage was caused to this work by the freshets of last spring; and to prevent its entire destruction, an outlay of \$2300 was considered as absolutely necessary in levelling and otherwise repairing it.

Had this dam failed, the level of Rice lake would have been suddenly lowered, and a large extent of land, now flooded, would have been laid dry, and the health of the inhabitants in the vicinity would thereby have been, no doubt, seriously affected. It is, however, questionable if the dam should be any longer maintained by the Government, as the water power created by it is of such value as ought to induce the parties who at present make use of it to keep the structure in an efficient state.

At this place there is also a lock, the gates of which are in a decayed condition; but they are seldom, if ever, swung.

No reason can be adduced for the maintenance of the lock at Whitlas Rapids, which

is of no public utility whatever, and ought to be disposed of as soon as possible, to avoid any further outlay upon it.

The Buckhorn dam, next in order, maintains the waters of Buckhorn, Mud, and Pigeon lakes at a navigable depth forming a line to Bobcaygeon of 24 miles in length. It is now in a moderately good state of repair but requires some additional staunching which should be done next season. The works at Bobcaygeon are in tolerably good order, but the channel still continues to be much obstructed by a deposit of saw dust from the Mill adjoining the lock.

To remedy this, the saw-dust must either be prevented from entering the Tail race, or the direction of the latter must be changed. The lock at Lindsay has been converted into a slide. The dam is in a fair state of repair, and a temporary bridge across the Scugog has been constructed at this point, to replace that which was destroyed by the great fire at Lindsay last season. It is, however, contemplated to erect a permanent structure on the line of the street which crosses below the lock. One of the Steam Pumping Engines used at Bobcaygeon when the lock was being built, has been transferred to the Lachine canal to aid the contractor for the enlargement of the Rock Cut. The other engine has been leased, for the present, to work a flouring mill at Lindsay; the machinery has been taken out of the dredge, and is now ready to be transported wherever it is required.

The total expenditure on the repairs of the works during the past year	
has been.....	\$3,226.09
Superintendence and management.....	1,078 00
	\$4,304.09

PICTON HARBOUR.

It having been frequently represented by parties interested in the trade of this place that much benefit would be derived by increasing the width and depth of the channel from the lake up to the wharves situated at the head of the bay, an examination of the locality was therefore made some years ago, under the authority of this department, when it was ascertained that a small outlay only would be required to effect this object, towards which an appropriation was subsequently granted by the Legislature.

The work, however, was not proceeded with until last summer, when about one-half of the proposed channel of 100 feet in width was dredged to the depth of 9 feet under low water level of Lake Ontario. The dredge has been laid up for the winter at Picton, to be in readiness for work next spring. It is believed that by the end of June the whole can be completed, when the dredge will be available for such other works as are most pressing.

The cost of fitting up the dredge and of work done in 1861, amounts to \$3,330 48

NAPANEE RIVER.

The attention of this department having been frequently drawn to the necessity of opening a shoal in the Napanee river, which prevented vessels drawing more than six feet water approaching within about half a mile of the town of Napanee, the dredge and other machinery employed at Picton were sent there to remove the obstruction. This was accomplished, and vessels of nine feet draught can now get up along-side of the

The cost of the work amounts to.....\$1,078.56

NORTH RIVER.

The inhabitants of St. Andrews and others interested in the navigation of this river, have repeatedly applied for such improvements to be made in it as to allow vessels of light draught to pass, at low water, from the Ottawa river to the village of St. Andrews, a distance of $8\frac{1}{2}$ miles, an officer was directed to examine the nature and extent of the existing obstructions, who reported that the removal of a small shoal of sand, lying about one mile below the village, would effect the object.

The expense of doing this being small, when compared with the advantage which it would be to the trade of the place, authority was given to open a channel across the shoal, four feet wide and five feet deep at low water, which was successfully accomplished in July and August last, so that vessels of $4\frac{1}{2}$ feet draught can now pass at any stage of the water.

This improvement cost.....\$681.01

TUG SERVICE, UPPER ST. LAWRENCE.

As stated in the last annual report of this department, the contract for this service between Lachine and Kingston expired at the close of 1860.

An arrangement was, however, made with the contractors, to continue its performance for two years longer, at a reduced bonus of \$20,000 per annum, with the proviso that if the Government thought it advisable to close the contract at the end of the first season, the bonus for that year should be increased to \$24,000; all the other conditions of the contract to remain in force in either case.

Having been decided not to discontinue the contract during next season, the bonus was paid the lesser sum for the past year's service.

The following statement shews the number of towages and amount collected on each division in 1861 : —

UPWARDS.	Nu. of towages	Amount.
Lachine to Beauharnois Canal.....	1,187	\$ 9,610.57
Beauharnois Canal to Cornwall	975	15,963 56
Dickinson's Landing to Kingston.....	1,287	35,881 53
DOWNWARDS.		
Kingston to Dickinson's Landing.....	1,028	20,550 86
Cornwall to Beauharnois Canal.....	797	7,972 57
Beauharnois Canal to Lachine	961	4,572 65
	6,235	\$94,551.74

This shews an increase in the number of towages in 1861, of 82½ per cent over that of 1860, and of 255 per cent. over that of 1859; and an increase in the amount collected in 1861 of about 86 per cent. over that of 1860, and 291½ per cent. over that of 1859.

In the performance of this service, the contractors have employed more steamers than is called for by their contract; and they appear to have done all that could, under existing circumstances, have been expected of them, to facilitate the passage of vessels.

Notwithstanding this, such delays were experienced during last season as led to some of the forwarders placing their own tugs on some parts of the line in the fall months.

The vessels now used on the route are generally old, and some of them have such high upper works, as to render it unsafe for them to venture out in even a moderate gale.

This frequently allows a large number of vessels to collect at one point, which it takes several trips to clear off, and consequently causes more or less detention.

It is believed that a similar number of tugs to that now in use, if the vessels were properly constructed, would efficiently perform this service, with occasional assistance during the busiest periods of the season.

The large amount collected for towage seems to warrant the belief that the line should be self-sustaining; but it may be questioned whether the trade could be properly accommodated by a tug service independent of Government control.

If, therefore, the Government determined not to give up its control over this service, it might become advisable to invite tenders in May or June next, for the performance of this service for a term of years, from 1863, upon any or all of the sections above-named; the class and power of the tug to be specified and approved by this Department, and the contractors to be bound to perform all the towage required, at the rate stated in their tender.

They might be allowed the privilege of passing their vessels and fuel through the Provincial canals, free of toll, and of having wharfage accommodation at the respective entrances.

A contract of this kind, with proper provisions, would probably ensure the cheapest and most efficient means of transport; and the interest of the contractors would also be secured by their having the authority of Government for the collection of the rates of towage.

OTTAWA RIVER WORKS.

CONNECTED WITH THE PASSING OF TIMBER.

The various slides, dams, piers, booms, and other works constructed on this River and its tributaries were, by the extraordinary high water of last spring, subjected to a severe

test. As precautionary measures having been taken in the early part of the season, to strengthen them, and to render them effective in controlling the large quantities of timber which, in the late season, than usual, found their way into the river, no serious damage was done. There is, however, every reason to believe that the means adopted not only prevented serious consequences to the works, but great loss to persons engaged in the lumber trade. These, together with ordinary repairs, have increased the outlay beyond the sum usually expended for maintenance.

There was expended, last year on the Ottawa River.....	\$2,066.18
Petawawa do	915.78
Madawaska do.....	3,340.42
Sundries.....	2,009.10
Total	\$8,331.48

Several of the works, which were constructed upwards of 18 years ago, having lasted more than the ordinary duration of timber in such positions, shew unmistakable symptoms of decay.

The Superintendent has, therefore, been authorized to proceed with the reconstruction of some of them, and the thorough repairs of others, during the present winter. These consist, principally, for the Ottawa River, in repairs to the slide, dam &c, at the lower end, in reconstructing the lower slide, and repairs to the upper one at the Calumet; repairs to the slide and other works at Mountain Station, and ordinary repairs at other stations between Portage du Fort and Chaudiere Falls.

Estimated to cost.....	\$13,128.11
Ottawa River Bridge, over entrance to Pond.....	381.50
Madawaska River, general repairs to works	5,140.71
Petawawa River, repairs and small improvements to dams...	2,684.43
Total	\$21,334.75

The slide at Hull is also being rebuilt, which is estimated to cost \$4,000.00.

The improvements and repairs above referred to will, no doubt, be completed in time to render the works thoroughly efficient for next summer's operations.

In September last, a memorial signed by a large number of persons interested in the lumber trade was received, representing that great advantage would be derived from the reconstruction of the upper part of the Petawawa river; and stating that several parties were making extensive improvements, and stored up large supplies on their respective timber lands, with a view of carrying on their business this winter, but that they would be unable to do so successfully, unless some river improvements were effected.

They state that although they are ready and willing to improve the tributary streams at their expense, they are unable to incur the outlay necessary on the main river. The Superintendent on the Ottawa Works was therefore requested to examine the locality, and report what would be the probable amount required to effect the desired object.

This he estimated at \$11,980.85. It appears that the obstructions extend over a distance of 6 miles, on which there is a descent of about 208 feet; while there is a large extent of valuable timber land bordering on the lakes and river above, the products of which cannot, under the circumstances, be brought to market.

The application, although favorably entertained could not be granted, inasmuch as there is no fund at the disposal of the department for that purpose.

The parties interested have, however, by permission, undertaken the construction of the works at their own cost, and under the management of the Superintendent, trusting to have their outlay refunded by an appropriation, and they express their willingness to pay such tolls as will be sufficient to maintain them, and, within a few years, cover the entire cost.

The pier-dam at the Carillon rapids, recently constructed, has been of great service, but deal cribs of heavy draught are liable to be injured at the lower end of it. To avoid this, it will be necessary to extend the side piers at the foot from 40 to 50 feet further down stream. This is estimated to cost \$1,200.00.

The *Union Suspension Bridge* at Ottawa has been thoroughly repaired, and wrought iron girders substituted for the roadway floor beams, which were much decayed. The chords and sidewalks were also renewed, and the whole well painted, so that there is every reason to believe that this structure can be maintained for many years to come, by a small outlay for the renewal of the roadway plank. The north approach to this bridge having been much cut up by the great traffic over it, must be repaired, and the floor plank of the wooden bridges leading thereto renewed,—the cost of which will be about \$856.00. The management, &c., of the Ottawa river works for 1861 cost \$10,677.19.

STAFF EMPLOYED.

Superintendent.....	1
Paymaster.....	1
Clerk.....	1
Messenger.....	1
Slide-masters.....	8
Asst. do.....	2
Boom Keepers.....	3
<hr/>	
Total.....	17

ST. MAURICE WORKS.

For the past few years, the spring freshets on this River appear to have increased annually. That of last May is said to have been the highest on record, and caused some delay in extending the retaining booms at the outlet.

It is, however, believed that this resulted in very little, if any detention in the running of timber, inasmuch as it would then have been unsafe to have trusted large quantities in the river, the water being fully four feet over the guard piers. These piers are placed at short distances apart, and with their tops inclined to admit jams being formed on them for the protection of the booms, which could not otherwise stand in such a current. The construction of a retaining boom in the bay immediately above Shawenegan Falls, having been found impracticable, the guide booms were stretched and moored as heretofore, as soon as the pitch of the water would admit. At all other places the improvements referred to in the last report have been satisfactorily carried out.

In anticipation of a recurrence of these great floods, authority has been given to the Superintendent to raise the guard, mooring, and other piers, to strengthen the booms, and take such precautions to protect the works as are likely to secure them from danger, and render them efficient at all stages of the river. They are principally as follows:

MOUTH OF THE RIVER.

Raising piers and strengthening booms.....	\$1,610.01
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SHAWENEGAN.

Raising slide piers, repairing boom below falls, construction of a wing dam, and repairs to main dam and boom above falls...	968.32
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GRANDE MÈRE.

Raising piers, repairing boom, &c.....	910.58
--	--------

LITTLE PILES.

Raising and repairing dam	1,272.57
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LA TUQUE.

Building 6 anchor piers and a large mooring pier, and raising others. Repairs to booms &c.....	2,499.51
Superintendence and contingencies.....	726.80

Total.....	\$7,987.79
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Much inconvenience continues to be experienced from the want of access to the works at the *Mouth of the River*, or means of securing them, without trespassing upon private property. The purchase of a small island and some other property of little value in the vicinity of the bridge over the St. Maurice is considered indispensable for these purposes, and also as a site for a storehouse, which is much wanted for the security and preservation of the necessary plant.

A boat and some mooring posts are also much required. The store house, boat, and posts are estimated to cost \$330. At *Shawenegan*, the building for the accommodation of the person in charge is in such a ruinous condition as to be almost untenable, and the plant suffers greatly from leakage through the house in which it is placed. It is therefore desirable that a store and dwelling house should be erected, and that two boats should be provided. The whole would cost about \$1,250. Some additional mooring chains at different stations are also necessary.

Notwithstanding the difficulties experienced from the extremely high water last

spring and the damages resulting from it, the works continued in successful operation during the season, and the quantity of timber passed through them was greater than former year.

The repairs for 1861 cost	\$1,198.25
“ management “	6,687.38
Total	<u>\$7,885.63</u>

STAFF EMPLOYED.

Superintendent.....	1
Messenger.....	1
Slide-masters	2
Assistant do	1
Boom Keeper.....	1
Total.....	<u>6</u>

SAGUENAY WORKS.

These works, situated in the “Little discharge” of the Saguenay River, consist of a series of dams varying from 100 to 300 feet in length and from 12 to 18 feet high; which are at the outlet of lake St. John, and 3 others within a distance of 5 miles below that place. Near the lower dam is a single stick slide of 6,750 feet long and a boom 1,000 feet long.

The whole have been in successful operation during the past year, and are represented by the person in charge to be in a thorough state of repair. He also reports that 66,000 saw logs passed through the slide in May, June, and July last.

The repairs for 1861 cost	\$289.89
“ management “	664.04
	<u>\$953.93</u>

STAFF EMPLOYED.

Slide Master.....	1
Assistant do	1
	<u>2</u>

LAKE AND RIVER LIGHT HOUSES, BOUYS, &c.

ABOVE LACHINE.

All the Lake and River lights under the control of the department have been maintained in an efficient state during the season.

In some cases repairs for a greater extent than usual have been necessary, and several structures, exposed to the action of the sea in high water, required works of protection.

These were principally: alterations to light-vessels, lake St. Louis; repairs to the light-houses at the head of the Beauharnois canal, Cherry Island, and light ship, lake Francis; replacing buoys, &c.; repairs to the River Lights between Brockville and Kingston; and protection works at Snake Island and Presqu' Isle light houses. A small structure has been erected on the pier at Port Stanley, to replace one destroyed by a vessel entering the harbor in a gale.

Dwelling houses were erected on the main land, for the keepers of the light house Pointe Pelée reef.

The attention of the department having been frequently drawn to the inefficiency of the light on Pointe Pelée reef, the Hon. H. H. Killaly was instructed to visit the light and report as to how this could be best remedied.

For the exhibition of this light, it had been proposed to raise upon the caisson a cut-water of 85 ft. in height; but from the nature of the foundation on which the caisson stood and its being subject to be affected by the strong current which sweeps past it at low water, it was not considered safe to erect such a structure, and in lieu of it, a well-framed wooden structure has been substituted. It is based on a strong platform, to which it is securely belted. The light will stand about 70 ft. over the surface of the lake, and efficient work will be adopted against accident from fire, by having a large cistern in the upper story with suitable force-pumps, &c., and a hose in each story.

He also recommended that a white light should be shown on the reef instead of a red light, and that a red light should be substituted for the white one on Pelée Island.

The material and labor for this alteration have cost	\$5,745.24
Charter of vessels for transporting materials and workmen	5,740.00
New lantern, reflectors, &c.	2,313.00

Total.....\$13,798.24

Mr Killaly estimates the cost of completing the tower (with keepers' apartments) and the light-house, at \$8,785.

For report of Mr Killaly, see Appendix N.

All the river light houses, and several of those on the lakes, are now illuminated by the use of coal or mineral oil, the use of which has, so far, satisfactorily shewn that the best kind of it do not crust the wick, or leave any waste or sediment in the lamps. It is more economical, and gives a steadier and more brilliant flame than fish or animal oil. Last year "Colza Oil" was for the first time introduced into the Province, for the use of the new lanterns lately erected on the coast and islands of lake Huron. This oil remains liquid at a very low temperature, and is better suited for the mechanical lamps used

in this class of light, than spermaceti oil, which is apt to clog and injure the machinery. It is also cheaper, and its flame is freer from flickering than that of spermaceti.

The maintenance of the 50 light houses between Lachine and lake Huron cost in 1861 :—

Repairs.....	\$ 4,000.00
Lamps, Reflectors, &c.....	1,403.90
Supplies	2,261.00
Coal Oil	\$2,461.65
Sperm “	3,340.00
Colza “	6,885.00
	————— 12,686.65
Purchase of land, advertising, and other small accounts	1,295.36
Charter of vessel to deliver supplies	1,500.00
Superintendent's salary and travelling expenses	2,295.00
Salaries of Light keepers.....	17,118.38
Total.....	\$42,560.29

The principal works to be attended to this year, besides the usual repairs, are as follows :—

The pier upon which the light house at Pointe Claire, lake St. Louis, is placed, must either be enlarged, or a new one built and the present structure removed on to it; a house for the keeper of the light at Green Shoal, Ottawa River, should also be built—a new deck to the light ship on Lake St. Francis; protection of light house, Coles Shoal, Upper St. Lawrence; erection of a dwelling house for the light keeper at Grenadier Island; the purchase of land on Nicholsons Island, and building a house for the winter accommodation of the keeper of the Scotch Bonnet light—the present house being unfit to be occupied, except during the summer months.

The condition of Gull Island light house, lake Ontario, requires attention as soon as the weather will permit. This structure stands on a reef which is generally covered with water, and at a distance of about $2\frac{1}{2}$ miles from the main land. The protection works originally built around it are rotten and in an altogether ruinous state; leaving the building exposed to the incessant action of the waves, which the class of work is incapable of resisting.

It is, therefore, proposed to build a narrow line of crib-work around the tower, and form a landing place on the side next the shore, and to make such repairs as are necessary to the building :—cost about \$1,700.00.

The buildings on Mohawk Island, lake Erie, also require some protection works, but of a much smaller extent than those above referred to.

The beach on both sides of the light house on Nottawasaga Island having been washed away for some distance, and the foundation of the building partly undermined considerable repairs are necessary, and the construction of a breakwater is indispensable.

At Christian Island, some repairs and a fence around the light house property, are required.

These works, together with the ordinary repairs, are estimated to cost \$9,674.00.

LIGHT HOUSES BELOW QUEBEC.

Preparations having been made last winter for the erection of five small light houses on the lower St. Lawrence, which were frequently represented by captains of vessels and others as being required for the safe navigation of the river, the Chief Engineer, accompanied by an experienced pilot, examined the different localities in May last, and fixed the positions of the respective buildings.

The works were then immediately commenced, and carried on to the close of the season as expeditiously as circumstances would permit. Three of the light houses are now completed, and the lighting apparatus fitted up. The other two are well advanced.—The positions and characteristics are as follows:—

Bellechasse Island.—On the north-east end of this Island, at a point about 30 feet over water-surface, a light tower has been erected, 29½ feet in height, with a sleeping apartment for the keeper attached to it. It consists of a square structure of wooden frame-work, with an octagonal lantern on it, 270 degrees of which are illuminated by means of 5 lamps, and a like number of parabolic reflectors—each 23 inches in diameter.

The centre of the light will be about 64 feet over ordinary water surface.

Crane Island.—The light tower is erected on the south-east side of this Island, at the most salient point of a shoal, dry at low water. It stands on a pier of rhomboidal shape, the acute angles of which are parallel to the line of the current.

The tower is of wooden frame-work, 32 feet high, and both it and the lantern are octagonal. It is furnished with the same number of lamps and reflectors as the one above mentioned, and will illuminate 225 degrees of the horizon.

The centre of the light will be 48 feet over neap tides.

Grande Ile de Kamouraska. The light house at this place is about 1,200 feet from the north-eastern extremity of the island, and the site 130 feet over the water. The tower is square, of wooden frame-work, 27½ feet high, and connected with it, on the west side, is a house for the keeper. The lantern is octagonal, and provided with 7 lamps and 7 reflectors of the class above referred to, which illuminate 225 degrees of the horizon. The centre of the light will be 162 feet above the level of the sea.

In these three structures, mineral oil is to be used for the light. The keepers of them have been appointed and trained in regard to their duties, it is proposed to bring them into use on the opening of the navigation.

Long Pilgrim Island. The site of the light house at this place is on a narrow ridge, about 180 feet over the sea, and a little west of the middle island.

The tower is 30 feet high, circular, and built of brick. A dwelling house and store house, of timber frame-work, are built around it, over the roof of which the tower stands.

The light is to be of the 4th order on the catadioptric principle, and will illuminate 225 degrees of the horizon. Centre of light, 212 feet over the sea.

Brandy Pots Island. At this place the site of the building is about 45 feet over the water, and on the south-east end of the southern Island. The tower is 30 feet high, circular, and built of brick; it stands 12 feet over the roof of the dwelling house and store house.

rooms, which are built of wooden frame-work around it. The light is to be lenticular, of the 4th order, and will illuminate 270 degrees of the horizon.

The centre of the light will be 78 feet above the level of the sea.

The buildings at the two last named places are completed, and the lighting apparatus delivered. It is expected that the whole will be fitted up and ready for use by the 1st day of July next.

To complete the series of light houses of this class, in the manner recommended by the Trinity House, there remains yet to be erected the one at Pointe St. Laurent. The cost of this structure, with the pier on which it will stand will be about \$15,000. It is important that its construction should be proceeded with during the ensuing season.

BIRD ROCKS.

An appropriation having been made by the Legislature, in 1860, towards the construction of a light house on the "Bird Rocks," Gulf of St. Lawrence, the Chief Engineer was accordingly instructed, in July last, to make a thorough examination of the locality, preparatory to carrying out this important improvement to the navigation. He reports that these dangerous Islets lie nearly in the direct track of vessels engaged in the Transatlantic trade, which pass by the route south-west of Newfoundland.

To clear them, vessels generally stand well to the eastward, but occasionally they pass between them and Bryon Island, the east end of which is about 10½ miles to the westward of the N.W., or little Bird Rock, and from the latter to the east point of the Magdalen Islands is 16½ miles.

They are so much exposed as to be inaccessible except during calm weather, which in that vicinity is generally of short duration, and always uncertain; as heavy seas are frequently experienced in a calm, either before or after storms.

The difficulties to be encountered from this cause are likely to prove serious obstacles to the erection of a light house at this place, there being no safe anchorage nearer than Bryon Island. But, although this will, no doubt, lead to great delays, and prove extremely perplexing; yet, with proper arrangements and a good equipment of vessels, there is reason to believe that the object can be successfully accomplished.

The probable first cost, and future maintenance of a light on this Islet led the Engineer to discuss the question, whether the interests of the navigation would not be equally consulted by placing a light on the east end of Bryon Island, where it could be built and maintained at much less expense. He, however, arrives at a conclusion that "a light on Bryon Island, it is to be feared, instead of being a beacon of safety, would have a tendency to draw vessels on to the very danger that should be avoided; while the indispensable alarm signals during dark, hazy weather, would be of little or no service whatever."

This opinion is fully borne out by masters of vessels and the admiralty Hydrographers. It is generally admitted that the dread of these rocks, has led to more shipwrecks and disasters on the neighboring coasts and islands, than ever occurred directly on them; and that a

light there, would be of more benefit to the navigation, than at any other place on the ocean route of the St. Lawrence.

There are two of the Islets about four-fifths of a mile apart; the largest is the S. E. one, and on this it is proposed to erect the necessary buildings. It is of red sandstone, and presents an almost perpendicular face on every side, and is only accessible at one point near the south-west angle, where the acclivity is least abrupt.

The north-east end is about 140 feet, and the S. W. end 96 feet over the level of the sea.

The top is covered with sand to a depth of 18 to 24 inches; it measures 850 feet from N. E. to S. W., and is about 450 feet wide at the centre. A small piece at the lowest part is covered with grass;—at all other places the sand is quite bare.

Mr. Page, the chief Engineer, says:—

"The site selected for the buildings is on the highest flat surface, at about 150 feet from the N. E. end of the rock.

"A Tower, from 25 to 30 feet in height, is considered sufficient; but the accommodation of keepers, stores, &c., will require buildings of considerable extent, all of which should be, as far as practicable, fire-proof.

"The Light should be of the first order, on the dioptric principle, revolving, and so arranged that the rays may be concentrated into one intense beam, visible alternately in different parts of the horizon.

"In view of the great difficulty and uncertainty of landing materials, it is recommended that the stone of which the Island is composed, and the sand overlying it, should be used in the construction of the buildings.

"These, although not of the best quality, are considered to be sufficiently good for the purpose, if protected in the manner proposed from the penetrating influences of storms and from the moisture of the marine atmosphere, to which they would otherwise be exposed.—The great bulk of the materials required for the structure being obtained on the spot, those to be delivered will consist principally of cement for the masonry, and such as are required for the outward protection and interior finish of the buildings.

"Iron tanks must also be provided for the storage of water for the keeper's use, whether to be supplied from the rain-fall, distillation, or otherwise.

"The first work to be undertaken on the spot, except the erection of temporary dwellings for workmen, will be the construction of a landing place, such as the circumstances will permit.

"A road must then be made from it, along the side of the cliff, in an oblique direction, to the site of the buildings,—on which a tramway should be laid, for the purpose of carrying up materials, securing boats, &c., by means of a capstan at the top. Part of the top of the Islet must be well railed in, to prevent accidents during heavy gales. The whole of the materials, other than those above referred to, must be taken from Quebec; and it is stated that the ordinary method of procedure, viz.:—that of letting the work by contract, is utterly inapplicable in this case."

HARBOURS OF REFUGE.

UPPER LAKES.

There being, comparatively, few good natural Harbours on the coast of our inland lakes, it has become an object of much importance to determine the localities where accessible and efficient means of shelter can be provided for vessels engaged in commerce on these waters. The many casualties to which life and property are at present exposed during severe storms, has been frequently brought under the notice of the Government, by parties largely interested in the trade; and in 1860, it formed the subject of enquiry before a committee appointed by the Legislature. Many different places having been strongly represented as offering great facilities for the construction of Harbours of Refuge, several of which are however known to possess no advantages whatever for that purpose, although well adapted for local landing places.

From the nature of the coasts generally, it is believed that the construction of a Harbour of Refuge, inclosing a sufficient area of deep water, ease of access, and shelter for shipping at all times, will under the most favourable circumstances, involve a large expenditure. It was therefore considered that a thorough examination of the various places stated to be eligible, should be made, before any further action was taken in a matter of such importance.

This duty was entrusted to the Hon. H. H. Killaly, who was instructed to examine "such places on the west coast of lake Huron, from Sarnia to Cape Hurd, as were likely to offer facilities for the forming of a safe and accessible *Harbour of Refuge* to vessels engaged in the regular trade of the lakes."

His attention was also directed to the "Two creeks" and "the Rondeau" on lake Erie, and to Wellers Bay on lake Ontario. For his report on all of which, see appendix (letter G.)

ROADS.

TEMISCOUATA ROAD.

This Road was opened in September last, from River du Loup to the Province line of New Brunswick, a distance of 67 miles; about 65½ miles of it are completed, and the remaining 1½ mile are well advanced. The works were carried on during the season, under Mr. Joseph Rosa, who has displayed much energy in their management; 11½ miles of new road have been made, and 1½ mile about one-half finished.

Five wooden bridges were erected on the route, and 400 feet of lineal trestle bridge work built at River Thériault. The bridge and embankments at Green river, which were damaged by high water in July last, were repaired, a new abutment and wings built, and the whole well secured. The road, where much cut up or damaged by freshets, has been repaired, and a correct survey of the whole line made. For a distance of 12 miles along the bank of the Madawaska river, a towing path has been formed, to facilitate the transport of goods and passengers by water.

Expended in construction and repairs, Superintendence, &c., up to 1857.....	\$21,677.23
Expended under contract in 1856 and '57.....	81,112.00
Do. day work, 1858.....	3,945.21
“ “ “ 1859.....	3,386.09
“ “ “ 1860.....	32,568.65
“ “ “ 1861.....	32,469.38

Total expenditure to 1st January, 1862.....	\$175,158.56
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This road is of great importance, as forming the principal land communication between Canada and New Brunswick.

During this winter it has been found of great service to an important class of travel, which would have experienced much difficulty in reaching the Province by any other land route.

It is therefore desirable that the remaining portion of it should be completed, and that those parts which were made some years ago, should be thoroughly repaired next summer. Where the road has been gravelled, although in some places it is cut into deep ruts, it is generally in good order; but where merely formed of earth, or clay taken from the side ditches, it is much cut up, and the crown of the road, at places, lower than the sides.

To complete 1½ mile, now partly made, will cost about	\$1,750.00
To repair other portions of the road, Superintendence, &c.....	4,450.00

Total	\$6,200.00
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There is only one-third of the line gravelled ; the other two-thirds of it are formed of earth, or clay, which in wet weather, makes the passage of a loaded team over it, heavy and difficult. To gravel this portion, it is estimated, would cost \$21,500. It is believed that such an expenditure would not only greatly improve the road, but would materially diminish the annual outlay required to keep it in repair.

MATAPEDIA ROAD.

This road, when completed, will also form a means of communication between Canada and New Brunswick ; and as it leads wholly through the interior of the country, it may be considered of even more importance than the Temiscouata Road, which passes within a short distance from the boundary line between Canada and the State of Maine.

It connects the St. Lawrence, at St. Flavien, with the River Ristigouche, which flows into the Bay of Chaleurs. The new road is located in the most favorable line that could be obtained in regard to grades, and, although circuitous, it passes through many tracts of good agricultural land, where settlements are being made as speedily as the means of access to them are afforded.

The limited grants hitherto made towards the construction of this road, have caused the works to be carried on slowly, and to less advantage than if adequate means had been supplied. It is desirable that a sufficient sum should be appropriated for its speedy completion, not only for the benefit it will be to the locality, but as a means of access to the sea board in winter, in case it should, at any time, be required for public purposes.

The road is about 98½ miles long, and is generally referred to, in the order following :—

Northern Division.—From the St. Lawrence to lake Matapedia, 33½ miles long ; on this portion of the route, about 15 miles are completed, 5½ miles of which have been graded and formed during the past year, besides the improvement of 3 miles previously opened

On this division has been expended in 1859.....	\$2,475.66
1860.	6,131.32
1861	7,775.61
	<hr/>
Total.....	16,382.59
Estimated cost.....	30,000.00
	<hr/>
Amount required to complete.....	13,617.41

Central Division, extends from the head of lake Matapedia to the junction of the Casapical, and Matapedia Rivers, a distance of 27 miles.

Between these points, it is proposed to follow principally the line of the old Kempt road, but avoiding the hills and steep grades upon it.

the improvement of the portion of the road, upon which no work has yet been done, estimated to cost \$8,400.

Northern Division, extends from the Casapsical River, to the mouth of the Matapedia about 5 miles along the bank of the Ristigouche, and is altogether about 38 miles. The greater portion of this division of the road, passes through an exceedingly rough and hilly part of the country, where many bridges, and at places, considerable quantities of side-walling are required. It is, however, said to be the only line where a passable road can be obtained.

During the past year, 3½ miles of road were made, 3 large bridges constructed, and 16 culverts built.

There is now altogether about 16½ miles of road nearly completed, and some preparations towards the construction of other portions.

Expended in 1857.....	\$6,000.00
“ 1858.....	8,000.00
“ 1859.....	2,500.00
“ 1860.....	4,871.84
“ 1861.....	8,109.71

Total outlay..... 28,981.55

Estimated cost \$56,065.00

Amount required \$27,083.45

Central Division..... 8,400.00

Northern “ 18,617.41

Balance required to complete the Road..... 49,100.86

MATANE AND CAP CHAT ROAD.

This road forms a continuation of the highway along the Gulf shore through the western section of the County of Rimouski.

It is about 38 miles long, lying partly in good settlements, but a large portion of it, is an extremely rough, and hilly country, where the land is unfit for cultivation.

The road was opened throughout before the works were finished, which, together with grading steep grades upon it, renders it, without further improvement, of little use to settlers along the line.

During the last summer, 9 miles of the road were repaired, and a few of the steepest grades in that part of it reduced.

At some of the other places were also improved, on which the sum of \$1,619.60 was expended.

To place it in a passable state of repair, and change the line at some steep hills, also to make some such other small improvements as the unfavorable nature of the location admits of, is estimated to cost \$3,000.

GASPÉ AND ST. LAWRENCE ROAD.

This road forms the mail route between the Bay of Chaleurs, and the south coast of the Lower St. Lawrence, and is altogether about 23 miles long.

That division of it between Watering Brook, and Grande Grève, along the north side of the Bay of Gaspé, a distance of 10 miles, was completed in 1860.

Last year, one mile of road was constructed from Gaspé Bay towards Griffin's Cove, and five miles along the southern shore of the St. Lawrence. This, together with the work previously done, leaves only one quarter of a mile of road to be made, and three small bridges to be built, to complete the line to Great Fox River, over which a bridge must be built.

These works are estimated to cost \$1,300.

Mr. Painchaud, the Superintendent, reports that the heavy rains in November last did considerable damage to the bridges, and culverts, and some portions of the road, and states, that the flood was so great in that vicinity, that it destroyed seven mills and several other buildings, and eight bridges, (built out of the Colonization Fund.)

To repair the damages done to the road from this cause, he estimates, will cost \$1,200.

The expenditure on this road to the 31st January, 1862, is as follows :

In 1859	\$3,289.25
“ 1860	5,893.16
“ 1861	3,166.35
Due on existing contracts, and for Superintendence.....	1,379.00
	<hr/>
Total.....	\$13,727.76
Amount of appropriations.....	12,700.00
	<hr/>
Unprovided for	\$1,027.76
To complete extension of road, and repair damages done by flood, also cost of Superintendence.....	2,934.00
	<hr/>
Amount for which an appropriation is required ...	\$8,961 76

MALBAIE AND GRANDE BAIE ROAD.

This road passes through a very rough and mountainous country, and is about 76 miles long from the St. Lawrence to the Saguenay, 62 miles of it have been opened, to a width varying from 8 to 18 feet; a small portion of it only has been graded, and some other parts grubbed, but the most of it still requires ditching and draining.

For 14 miles next Malbaie, and 21 miles next Grande Baie, the land through which the road leads is moderately good, but between these points it is generally unfit for settlement.

During the past year 6 miles of road have been opened, and made 12 feet in width, and from the church at Grande Baie, about 2½ miles, have been made 20 feet wide, well formed, and ditched. A number of bridges and culverts have also been built, and some portions of the road previously made, repaired.

Expenditure in 1856.....	\$2,000 00
Do 1859.....	\$4,000 00
Do 1860.....	\$1,851 41
Do 1861.....	\$2,272 41

Total \$10,123.82

To complete the road throughout with turnpiking, and draining, only where most necessary for the passing of carts in summer, a further appropriation of \$6,000 will be necessary. It is, however, desirable that the width of clearing should be increased to 66 feet, so that the road may have the full benefit of the sun and wind.

This would require a further sum of \$7,500.00.

ESCOUMAINS ROAD

This road was commenced in 1856, at the River Escoumains, and extended a distance of about 9 miles towards the Saguenay. This year 6 miles additional road have been formed, ditched, and drained; and several bridges built.

Expended in 1856.....	\$2,000.00
" " 1861.....	\$1,537 60

Total..... 3,537.50

PROVINCIAL STEAMERS.

These vessels have been principally employed during the last season as follows, viz.:

The S.S. "Lady Head" was engaged in mail and other services, between Quebec and the Lower Provinces. She made in all, 14 trips.

S.S. "Napoleon III."—This vessel made two trips to all the different light houses and provisions depôts, under charge of the Trinity House, in the Straits of Belle Isle, and Gulf of St. Lawrence, and during the remainder of the season of navigation, she was engaged in active tug service on the Lower St. Lawrence. In November last, she was sent to the assistance of the wreck of the steamship "North Briton."

S.S. "Queen Victoria"—In June and July last, this vessel was principally engaged on the light house service, taking the Chief Engineer to examine the Bird Rocks, in the Gulf of St. Lawrence, with a view of preparing a design for a light house on one of those islets; and at the same time conveying His Royal Highness Prince Alfred to Mingan, and Gaspé. The Engine frames of the vessel having been frequently out of repair, it was decided, by the advice of the Chief Engineer, to have new and stronger frames made and fitted up; and for this purpose the vessel was sent to *Montreal*, where it took about three months to complete the works. During the remainder of the season of navigation, she was placed on the Lower St. Lawrence tug service.

Steamer "Advance."—This steamer was employed by the Trinity House in placing the light ships and buoys in the Lower St. Lawrence, and occasionally replacing them during the summer, towing the light ships to winter quarters, and removing the buoys at the close of navigation. In May, she conveyed the Chief Engineer and others to the places, where new light houses are being constructed in the river.

In August, and September, the apprentice pilots were taken down by this vessel, in accordance with the act 12 vic, chap 114. sec. 22, to sound the north, and south channels of the river, and the apparatus for the new lights was delivered at the respective places where it was required. In the interval between the duties performed by this vessel, she was employed on the tug service of the Lower St. Lawrence.

PROVINCE OF CANADA, for PROVINCIAL STEAMERS, in account current
with DEPARTMENT of PUBLIC WORKS

Dr.	\$ cts.	Cr.	\$ cts.
To amount paid in 1860, for advertising Sale of Steamers	164.49	By Balance of Appropriation, 23 Vic. ch. 15	4,410.52
To amount due on Visit of H. R. H. the Prince of Wales, placed to the credit of the appropriation and paid to Re- ceiver General in 1861.....	2,550.00		
To Balance on hand 1st January, 1861..	1,898.03		
	4,410.52		4,410.52
 To amount paid in 1861, for advertising Sale of Steamers	 192.28	By Balance 1st Jan., 1861	1,898.03
To amount expended in 1861, for outfit, fuel, running expenses and repairs...	59,467.14	By Appropriation, 24 Vic. ch. 1.....	60,000.00
To amount placed to the credit of ac- count of extraordinary repairs to Steamers.....	7,000.00	By amount paid to the Receiver Gen- eral on account of 1860.....	2,550.00
To Balance available for Current Ex- penditure for 1862.....	19,933.46	By amount paid to the Receiver Gen- eral on account of 1861	26,803.35
	86,592.86	By Outstanding Debts, Stock of Coals available for 1862.....	5,543.50
		By Balance available for Expenditure of 1862	86,592.88
			19,933.46

PIERS BELOW QUEBEC.

These piers generally continue in good order ; but the extreme outer ends of some of them having suffered somewhat from the action of ice, to which they are much exposed, it became necessary last autumn, to incur a small expenditure to guard against further injury, and to provide for their more effectual protection. For the future it would be well if light tolls were imposed for the use of these wharves, sufficient to maintain them in a proper state of repair, and provide proper supervision over them.

PUBLIC BUILDINGS.

Custom Houses. No outlay has been required on any of these buildings, beyond a small sum for ordinary repairs

Post Offices The only expenditure on this class of buildings, beyond what was required for ordinary repairs during the past year, was at London, and Hamilton, C. W ; where, in both cases, some alterations to the roof and rain water pipes had to be made

Normal Schools, Montreal The buildings used for this purpose, connected respectively with the Laval and McGill Colleges, have been, during the past year, put in a better state of repair On the former, the sum of \$977.65 was expended, and on the latter the sum of \$1,405.86.

Court House, Montreal. In addition to the alterations and repairs made last spring to the interior of this building, and improvements around it, it has been found necessary to re-paint the greater portion of the interior walls, and cover the horizontal cornices with lead ; which is estimated to cost \$5,000.

NEW COURT HOUSES AND JAILS, C. E.

As stated in the last Report of this Department, the construction of these buildings were taken out of the hands of the first contractors, and re-let to other parties. They were subsequently proceeded with in a satisfactory manner (except in two cases). All of the buildings are now completed, and handed over to the local authorities, viz :

That at Beauharnois,
 " Ste. Scholastique,
 " Arthabaska,
 " Sweetsburg,
 " Sorel,
 " Industrie,
 " St. Johns,
 " Montmagny, and
 " Chicoutimi.

Those at Rimouski, Malbaie, Beauce and St. Hyacinthe are so far advanced as to leave no doubt but that they will be finished by June next, and transferred to the Sheriffs.

KAMOURASKA JAIL AND COURT HOUSE.

This building is completed and now in use; but as no accommodation has been provided for the jailer, he is obliged to reside in a rented house at a distance, which, at times, is extremely inconvenient. It is, therefore, advisable that a small house be erected for this purpose, alongside of the Jail.

MAGDALEN ISLANDS COURT HOUSE AND JAIL.

This building was placed under contract in May 1861, and provision made for its completion by the first November of the same year.

A difference of opinion exists between the Municipal Authority of the place regarding the selection of a site, which led to such delays as will retard the completion of the building for another year.

COURT HOUSE AND JAIL AT SAULT STE. MARIE.

The erection of this building was given out under contract; but the contractor not having fulfilled his engagements, its completion has unavoidably been delayed for another year.

NEW JAIL, QUEBEC.

In February, 1861, a contract was entered into for the erection of a new Jail in the City of Quebec, the plans for which had previously been submitted to the Prison Inspectors, and approved by them. But as the cost of completing the whole building considerably exceeded the amount at the disposal of this Department for that purpose, the extent of this structure was diminished, and certain other alterations made, in order to keep within that amount. It was, however, subsequently considered that the safe keeping of the prisoners required that certain changes should be made.

These consist, principally, in using cut stone jambs for the cell doors as originally proposed, of lining the innerface of the exterior walls with stone instead of brick, and as two of the division walls intended to have been built of brick were, by the omission of the West and part of the Southern wings, exposed, it was decided to build them of stone.

The basement walls, and the greater part of those of the first story are completed, and a large quantity of materials delivered and prepared. It is expected that the building will be roofed in next fall, and the whole completed in the early part of 1863.

One of the modifications made in the original design, with a view of curtailing the expense, was the omission of a fourth story to the main central building; but as it appears that this upper story will eventually be absolutely necessary, to enable the prison inspectors to carry out their projects of classification, and prison discipline, and as the addition of this story at a later day involving, as it will, the raising of the roof, and much inconvenience will be attended with a considerably increased expenditure, it is deemed advisable to recommend that this fourth story be built immediately. Estimated cost, \$5,000 to \$6,000.

GOVERNOR GENERAL'S RESIDENCE

On St. Louis Street, Quebec, two houses have been leased, and converted into one, and fitted up as a residence for His Excellency, the Governor General. To afford the necessary accommodation, a story was added to the building in the rear.

The stabling and coach houses necessary to accommodate the equipages of His Excellency, were provided partly by converting into stables a portion of the Gun Sheds and armory on St. Louis Street, and partly by new buildings, made in such a manner that at a later day they may without difficulty be converted into gun sheds.

The buildings occupied by the different Public Departments have been maintained, during the past year, at a moderate outlay for repairs. But, in some cases it has been

necessary to provide more accommodation, either by leasing other buildings or making new ones to those previously rented.

OTTAWA BUILDINGS.

When the undersigned assumed the office of Commissioner of Public Works, in 1871, he found that the plans for the Ottawa buildings had been decided upon, the contracts for those connected with the parliament and public departments entered into, and very considerable progress made with the works and in the preparation of materials of stone.

The magnitude of these works and the large outlay already involved in them led him to devote at once as much time as he could spare from other important matters and to the acquisition of a thorough knowledge of the details: such as the extent of the work done, the amount of payments made, the proportion of work remaining to be done, the amount of the appropriation unexpended, &c.

The result of such investigation shewed that a large amount of work had been undertaken additional to that embraced in the contract; and that the payments then made had not absorbed the appropriation.

As probably such work to such an extent was unforeseen, no understanding had been entered into with the contractors as to the measurement or prices by which it was to be paid for, and they have made it a subject of complaint that the method adopted in doing their work—in not distinguishing additional from contract work—was calculated to be paid both as to quantity and cost; and that the prices on which the progress payments were based were disproportionate and unjust.

On inquiring into these matters, the undersigned found that a schedule of prices had been appended to the contract, purporting to be that by which contract and additional work was to be settled for—as would appear from the heading of it.

Prior to signing the contracts, the contractors protested against this schedule, asserting that it was to have no reference to additional or extra work, but merely to the progress payments for contract work. This was admitted by the Department, acknowledging in the meantime that the words: "*and also for extras,*" had been left by an oversight in the heading of the schedule; and in consequence the extra or additional work was returned to the officers of the department, and paid for at prices far exceeding those stated in the schedule. But even these increased prices were objected to at the time as unfair by the contractors, and were only received as progress rates.

Under these circumstances the undersigned considered the most advisable step was to stop the work, to have means taken for the protection of the building against the approach of winter, and to have equitable prices established for the additional work done, or to be doing, requiring, at the same time, the payment for the contract work to be confined strictly to that stated in the contract), to have a full report made on the state of the works, and an estimate for the cost of their completion.

In the differences which existed between the contractors and the officers of the department, it was evident that no arrangement between them on the several points above

enumerated could reasonably be hoped for; the only course left seemed to the undersigned to be to refer the entire matter for report to some one having previously taken no part in these works, either in planning, ordering, superintending, or executing them, and consequently entirely disinterested in the result, and upon whose judgment and integrity the Government could rely; the choice fell on the Honorable H. H. Killaly, and the gentleman, in consequence, received instructions to proceed to Ottawa to make the required arrangements, and to draw up his report.

In this report Mr. Killaly values the work done and material delivered up to the 1st of October last at \$1,363,597 55; the price for all contract work being governed by the contract rates, those for additional work by a schedule established by him after considering all the correspondence between the department and the contractors upon the subject, hearing the contractors' explanations, and taking evidence as to the cost of carriage, quarrying, dressing, &c., &c.

A full, general return of the entire expenditure up to the 1st of December last is being prepared by Mr. Killaly, and is daily expected, which return will be submitted immediately after its reception.

In the above is not included the amount of the contract with Mr. Garth for the heating and ventilating apparatus, being \$61,285, of which the sum of \$35,170.28 has been paid on account.

By far the greater part of the excess of the expenditure over the appropriation has been incurred in the system of sewerage, heating, and ventilation adopted, the carrying out of which has been attended with much unusual cost, owing to the great depth, extent, and nature of the rock-cutting, through which the various sewers, hot and cold air, &c., had to be forced. In like manner the amount of masonry and brick work was considerably augmented, and the cost (especially of the latter) greatly increased by the erection of a vast number of flues and other works of an expensive nature, required by the system.

These last works do not form part of the contracts.

Another large portion of the excess is accounted for by the means adopted (subsequently to the contract) to ensure a greater degree of safety against fire, by the use of iron girders, concrete floors, &c., &c., instead of timber; by the extension of some of the buildings where greater room was required; by increasing the dimension of the walls in several cases, to obtain greater strength; and by the additional foundations which, upon the excavations being made, were found necessary.

All of the works herein enumerated, have, of course, tended greatly to increase the cost.

The substitution, previously to my entering in office, of Ohio, Nepean, and Ottawa stone, in lieu of the limestone to be procured in the vicinity, has also added to the cost of the buildings; but it was considered that the style of architecture adopted rendered this change unavoidable, the coarse crystallized limestone of the neighbourhood being considered utterly unsuited for the small and delicate Gothic mouldings; nor would the colour accord at all agreeably with such a style.

The works throughout are reported to have been executed in a very careful manner, and the buildings when completed, will present a most imposing appearance, and be creditable to the Province.

The undersigned has caused to be prepared, for the information of your Excellency, large and beautifully executed photographs of the parliamentary and departmental buildings as they stood at the stopping of the work by order of the department. A plan, accompanying the photographs, indicates the points at which they have usually been taken, and the portions of the building they embrace.

The appendices relative to these works are too bulky to form part of the general report of the department ; they will be submitted in a separate paper to your Excellency.

All of which is respectfully submitted.

Bound separately

JOSEPH CAUCHON.

Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS, }
Quebec, 9th April, 1862. }

APPENDIX TO THE REPORT
OF THE
COMMISSIONER OF PUBLIC WORKS,
FOR THE YEAR 1861.

APPENDIX A

No. 1

STATEMENT of the several Public Works under the charge of this department, which are in use and yield revenue, shewing the expenditure under the different heads during the year 1861, viz. : on construction, amount paid for Land damages, and the total cost of construction under this department, to the 1st January, 1862, also the cost of repairs and management during the year 1861.

NAME OF WORK.	Expenditure on construction during the year 1861.	Amount paid for damages in 1861.	Total expenditure on construction to 1st Jan., 1862.	Cost of repairs and management for 1861
<i>Canals.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Welland	86,980 56	3,472 35	4,066,558 76	56,739 69
<i>St. Lawrence canals, viz.</i>				
Lachine	17,836 38	1,175 00	2,910,467 08	23,022 13
Beaubarnes	1,761 00		1,590,941 38	15,776 77
Chenail			406 015 74	12,329 13
Williamsburg			1 684 730 93	11,633 38
Junction	30 00		256 796 11	
General expenditure	161 24		74,434 12	
Lock Gates	4,550 00		18,791 60	
Chambly	1,583 03		69,236 28	12,476 24
St. Ours		120 00	123,137 64	2,954 11
St. Anne's	2,799 92		114,596 40	1,712 64
Burlington Bay Canal	8,362 25		201,044 49	
<i>Slides and Dams, &c.</i>				
Ottawa	6,823 29		635,575 86	10,008 67
St. Maurice	12,384 28		254,968 79	7,885 63
Trent, securing dam	2,185 34		2,185 34	200 00
Maguway	154 67		41,012 74	932 97
<i>Harbours.</i>				
Port Stanley		4,340 00	229,377 48	
Union suspension bridge, re-construction	2,593 33		5,266 60	
	148,265 31	9,307 35	11,915,179 44	164,763 02

J. BAINE,
Bookkeeper

DEPARTMENT PUBLIC WORKS, }
January, 1862.

No. 2.

STATEMENT of the Public Works under the charge of this department incomplete, and as yet unproductive, but on which Tolls are to be levied as soon as they are available,—shewing the expenditure thereon in 1861, on construction, on repairs and management, and the total expenditure up to the 1st January, 1862.

NAME OF WORKS.	Expenditure on Construction in 1861.	Repairs and Management during 1861.	Total expendi- ture to 1st January, 1862.
<i>Canals.</i>	\$ cts.	\$ cts.	\$ cts.
Chats canal .....	.....	.....	373,191 90
Scugog inland navigation.....	1,382 23	634 08	479,017 90
	1,382 23	634 08	852,209 88

J. BAINE,
Bookkeeper.

DEPARTMENT PUBLIC WORKS, }
January, 1862.

No. 3.

STATEMENT of the several public works and buildings in course of construction under the charge of this department, yielding no direct revenue, but in use for the public service, and authorized by Legislative appropriations, shewing the amount expended thereon during the year 1861, and the Total outlay upon them up to the 1st January, 1862; also the amount expended in repairs and maintenance for the same period.

WORKS	Total outlay up to 1st Jan., 1861.	Expenditure during the year 1861.	Total outlay up to 1st Jan., 1862
	\$ cts.	\$ cts.	\$ cts.
Parliament Buildings, repairs, Toronto }	274815 05		
Government House..... do }			
Custom House..... do	5104 18		
Post Office..... do	28066 07		
Observatory..... do	13884 85		
Female Lunatic Asylum..... do	9966 83		
Osgoode Hall..... do	150 30		
Gun Sheds..... do	3879 23		
Barracks, repairs..... do	657 69		
Railway Inspector's Office..... do	525 62		
Mechanics' Institute, comple- ting Building..... do	16000 00		
Custom House..... Hamilton	46188 45	399 16	46587 61
Post Office..... do	52625 42		
Gun Sheds..... do	5566 67		
Post Office..... London	39122 76		
Custom House..... Kingston	41805 52	3204 72	45010 24
Post Office..... do	39325 95	321 17	39647 12
Lunatic Asylum and Gaol..... do	4293 92		
Public Buildings..... Ottawa	433194 95	655149 45	1088344 40
Court House..... Montreal	300877 13		
do extraordinary repairs do	15245 98	6901 04	22237 62
Custom House..... do	1257 63		
Gaol..... do	1343 60	423 85	1767 45
Post Office..... do	3087 97		
Normal School..... do	6451 20	834 53	7335 73
Armsory..... do	856 68		
Marine Hospital..... Quebec	94808 21	30 00	94838 21
Custom House..... do	245178 04	22830 46	268008 50
Gun Sheds..... do	4545 42		
Court House..... do	199 75	1026 62	1226 37
Post Office and Parliamentary Buildings..... do	59891 19		
do do additions thereto.. do	1623 50		
Spencer Wood..... do	4299 35		
Governor General's residence in consequence of fire at Spencer Wood..... do	8781 67	1210 00	9991 67
Observatory..... do	318 77		
Normal School..... do	7181 06		
Gaol..... do	572 67	139 49	712 16
New Gaol..... do	2771 92	38321 39	41093 31
Gaols and Court Houses, C. E., Gaols and Court Houses, C. E., 20 Vic ch 41.....	35461 44		
Aylmer Court House, repairs.....	224698 13	140066 16	364764 29
Hamourneka Gaol.....	523 65		
Sherbrooke Court House and Gaol, repairs.....	10841 71	898 21	11739 92
Three Rivers Court House, repairs.....	3555 65	1 00	3558 65
St Hyacinthe Court House, repairs.....	1124 83	2971 79	4096 62
Dépot at Anticosti.....	541 42		
Rents, Repairs and Maintenance.....	47 82		
Court House and Gaol, Algoma.....	290421 09	32917 65	323338 74
Gaol at Percé.....	67 53	249 26	316 79
Gaol at Percé.....	343 86		
Amount carried forward ..		908038 55	

No 3.—STATEMENT of Public Works, &c —Continued

WORKS	Total Outlay up to 1st Jan. 1861	Expenditure during the year 1861	Total Outlay up to 1st Jan. 1862
	\$ cts.	\$ cts.	\$ cts.
<i>Amount brought forward</i>		908038 55	
<i>Light Houses.</i>			
Light Houses below Quebec	396503 30		
Light House Apparatus below Quebec.....	34602 10		
Light Houses (New) below Quebec	15773 87	10170 16	31953 03
Point Pelee Light House.....	53110 85	7423 62	60530 47
Smoke Island Light House.....	10430 01		
Bay of Quinte Light Houses.....	108 10		
Light Houses, Lake Huron.....	147614 75		
Light Houses Apparatus, Lake Huron.....	74949 16		
Floating Lights above Lacine.....	26397 92		
Gaspé Bay and Harbor Buoys.....	346 06	153 16	499 82
Inland Lake and River Lights.....	4124 03	1949 76	6073 79
Father Point Light House.....	1453 61		
Ottawa River Navigation.....	2802 34	840 20	3642 54
<i>Roads</i>			
Canada and New Brunswick.....	142680 18	32469 38	175158 56
Metapedia South.....	20871 84	8109 71	28981 55
Metapedia North.....	8606 99	7775 61	16382 60
Malbano and Grande Baie.....	7851 41	2272 41	10123 82
St. Denis and Cap Chats	19072 14	1610 60	21291 74
Escoumains		1537 50	
Marmora.....	4000 00		
Garrison Road, Toronto.....	1600 50		
Gaspé Road.....	9182 41	3166 35	12348 76
Côteau and Province Line Road.....	1482 01		
<i>Harbors and Piers.</i>			
Port Bruce	6267 47		
Lake Huron	97448 82		
Pier at St. Amel	87 07		
L'Original	2000 00		
Landing Piers.....	768971 02		
Repairs of Piers	6792 30	3898 40	10630 70
Pier at Port aux Quilles.....		183 45	
Dredging Narrows and New Bridge, Lake Simcoe.....	10138 30		
Dredging at Pictou and Presqu'Isle.....	1472 78	2383 42	3856 20
Dredging operations.....		1078 56	
Dredging at St. Clair Flats	19984 45		
Richelieu Rapids improvements, (Ste. Anne de la Pêrade)....	13713 90		
Nott's River and Petite Nation Bridge, Improvements.....	3600 00	651 11	4254 11
River Thames Navigation Improvements	3821 42		
Dredging Vessels, Steam Pumps, &c.....	2041 83	13 25	2155 08
Total		1903110 20	

DEPARTMENT PUBLIC WORKS, }
January, 1862.

J. BAINE,
Bookkeeper.

No. 4.

STATEMENT of Expenditure on certain Miscellaneous Services under this Department during the year 1861.

	\$	cts.
Provincial Steamers.....	30,113	79
Tug Boats, Upper St. Lawrence.....	20,000	00
Surveys generally.....	13,426	56
Arbitrations, Awards, &c.	23,268	77
Removal to Quebec in 1859.....	25	00
Advertising Sale of Provincial Steamers.....	192	28
Gaspé Harb'our maintenance.....	100	00
Visit of H. R. H. Prince of Wales...	61,455	29
do of H. R. H. Prince Alfred	5,543	29
Contingencies of Department.....	370	55
Advertising Hydraulic Lots, Rideau Canal.....	575	40
	155,080	99
<i>Less :</i>		
Included in Nos. 1, and 3 Statements, and also under the head of Arbitrations	11,833	24
	143,227	75

J BAINE,
Bookkeeper.DEPARTMENT PUBLIC WORKS, }
January, 1862.

No. 5.

STATEMENT of the expenditure incurred under this department for the repairs and management of the Ordnance canals, for the year 1861

NAME.	Extraordinary repairs.	Ordinary repairs and manage- ment.	Total expendi- ture
	\$ cts.	\$ cts.	\$ cts.
Rideau canal.....		21,608 05	21,608 05
Carillon and Grenville canal.....		7,295 68	7,295 68
Lower Brewers' repairs.....	6,155 12		6,155 12
	6,155 12	28,903 73	35,058 85

J BAINE,
Bookkeeper.DEPARTMENT PUBLIC WORKS, }
January, 1862.

STATEMENT of the expenditure incurred in repairs and maintenance of light houses, for the year 1861, under this department.

Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.
		\$ cts.	\$ cts.
Lachine Pier.....	John Norton.....	385 00	381 63
Light Ship No. 1.....	Pierre Landre.....	250 00	261 44
Do No. 2.....	Benjamin Picard.....	250 00	186 57
Do No. 3.....	Joseph Meloche.....	225 00	245 84
Beaubarnois.....	Peter Shannon.....	435 00	468 00
Grosse Point.....	A. McDonald.....	175 00	125 82
Mackie's Point.....	E. S. Johnson.....	435 00	204 06
Cherry Island.....	G. H. Johnson.....	250 00	329 04
Do Light Ship.....	Thomas Hill.....	335 00	160 64
Lancaster Pier.....	Richard Elliot.....	140 00	187 23
Cole Shoal.....	Joseph Austin.....	120 00	176 85
Grenadier Island.....	Nathaniel Orr.....	134 24	143 00
Lindoe Island.....	J. Wallace.....	260 00	327 95
Gananoque Narrows.....	James McDonald.....	260 00	
Jack Straw Shoals.....	Daniel Bryant.....	660 00	296 52
Spectacle Shoal.....	Joseph Mervin.....	120 00	469 52
Red Horse Rock.....			470 50
Burnt Island.....	L. Herchmer.....	435 00	360 81
Wolfe Island.....	John Dunlop.....	435 00	415 27
Snake Island.....	Joseph Sweetman.....	510 00	853 72
Nine Mile Point.....	W. A. Pahn.....	435 00	639 09
False Ducks.....	Samuel Wilson.....	435 00	501 73
Point Peter.....	W. Sweetman, Sr.....	325 00	1,389 37
Scotch Bonnet.....	W. Sweetman, Jr.....	250 00	
Presque Isle.....	George Roddick.....	435 00	457 80
Do Range Light.....	George Durnan.....	435 00	656 82
Gull Island.....	George Thompson.....	300 00	180 20
Gibraltar Point.....			
Burlington Bay.....	Jonathan Woodall.....	400 00	456 96
Oakville.....	James Fortier.....	400 00	869 30
Port Dalhousie.....	John Burgess.....	435 00	405 37
Port C. Horne.....	Peter Baikie.....	435 00	457 30
Mohawk Island.....			
Port Maitland.....	H. H. Clark.....	435 00	247 22
Port Dover.....	Alex. Sutherland.....	320 00	916 00
Long Point.....	Richard Ead.....	144 00	218 00
Port Burwell.....	P. McIntyre.....	435 00	344 82
Port Stanley.....	W. Walsworth.....	325 00	531 52
Point Pelée.....	James Cummins.....	435 00	
Pelée Island.....	James Hackett.....	435 00	783 55
Bois Blanc.....	Thomas Cartier.....	435 00	431 11
River Thames.....	Humphrey Fidler.....	325 00	424 00
Hoderich.....	John Young.....	435 00	484 84
Point Clark.....	Thomas Kilty, Asst.....	300 00	551 48
Chantry Island.....	D. McG. Lambert.....	548 75	585 18
Isle of Coves.....	D. McBeath.....	435 00	
Griffith Island.....	A. McBeath, Asst.....	300 00	437 43
Nottawasaga Island.....	Vesey C. Hall.....	435 00	294 55
Christina Island.....	George Collins.....	435 00	366 98
	E. Collins, Asst.....	75 00	
	Wm. Moore.....	435 00	269 40
Amount carried forward.....		16,421 99	18,955 27

No. 6.—STATEMENT of the expenditure incurred in repairs and maintenance of Provincial light houses, for the year 1861, under this department.—*Continued.*

Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
		\$ cts.	\$ cts.	\$ cts.
<i>Amount brought forward</i>		16,421 90	18,955 27	35,377 26
Green Shoal.....	Geo. Bathgate.....	226 28	208 74	435 02
Pointe Claire, No. 1.....	D. Thomas.....	240 00	62 70	302 70
Do. No. 2.....	Arsonne Glode.....	230 11	74 98	305 09
	John Kalaber.....			
	Saml. Biron.....			
Management, salary of Superintendent and his travelling expenses, freight, and charter of Steamer delivering supplies, advertising, &c.			4,352 77	4,352 77
Placing Buoys, Lake St. Francis.....			155 54	155 54
Supplies on hand in Store.....			1,450 32	1,450 32
Purchase of land for light-house-keepers' dwellings at Burnt Island and Cole Shoal			181 50	181 50
		17,118 38	25,441 91	42,560 29

J. BAINE,
Bookkeeper.

DEPARTMENT PUBLIC WORKS, }
January, 1862.

No. 7.

STATEMENT shewing the total amount expended under the department of Public Works during the year 1861, as detailed in the foregoing Statements numbered 1, 2, 3, 4, 5 and 6.

STATEMENT.	Repairs and maintenance.	Construction.	Miscellaneous.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
No. 1.....	164,763 02	157,512 66	.....	322,275 68
2.....	634 08	1,382 23	.....	2,016 31
3.....	54,054 60	949,061 40	.....	1,003,116 20
4.....	.....	.....	143,227 75	143,227 75
5.....	35,058 85	.....	.....	35,058 85
6.....	42,560 29	.....	.....	42,560 29
	297,071 04	1,107,956 29	143,227 75	1,548,255 08

J. BAINE,
Bookkeeper.

DEPARTMENT PUBLIC WORKS, }
January, 1862.

APPENDIX B.

ANNUAL REPORT OF THE SUPERINTENDENT OF THE WELLAND CANAL.

WELLAND CANAL OFFICE,
St. Catharines, December 19, 1861

SIR,—The navigation of the canal was opened for the passage of vessels on the 8th of April; and has been maintained in good working order throughout the season, for vessels drawing ten feet water, with but one interruption, which occurred on the 2nd of October—by the "Harriet Ross," of Chicago, carrying away three of the gates, at lock No. 20. New gates were inserted and the passage of vessels resumed in three days.

The canal was partially closed by ice during the 3rd, 4th, and 5th of December, whilst there were a considerable number of heavily laden vessels in it, and its navigation would have been stopped, had not this obstruction been removed, through the means of a scow, provided and used as an ice-breaker, which was drawn through the canal by a number of powerful horse teams, thereby opening a sufficient channel for the vessels to pass.

In many places, the ice was so strong and the force so great with which the scow was drawn through it, that the heavy iron sheeting the scow is faced with was cut through by it, and the scow sustained considerable further damage. As the necessity for a provision of this kind is apparent, it is requisite that I be authorized to have the scow repaired and put in an efficient state. Subsequently the weather has been mild, and the canal remained as open and free for the passage of vessels, as it did at any time throughout the season. But it may be assumed as having closed (from want of business) on the 12th of December, making 249 days of navigation, including interruptions.

REPAIRS AND MANAGEMENT.

During the suspension of navigation and whilst the water was out of the canal, for the purpose of constructing the guard gates above Thorold, the work of rebuilding the hydraulic aqueduct was proceeded with; and it was completed (previous to the opening of navigation) at less than the estimated cost submitted for the requisite authority, and the mill owners (as alluded to in my previous report) did not experience any detention.—It is anticipated from the staunch manner in which the work is done, that no further outlay will be required for its maintenance for several years.

By having received the necessary authority in due time, I was enabled to place the canal in such an efficient state of repair (previous to its being opened last spring) as to ensure less interruptions to the navigation than have hitherto taken place.

There have been constructed two sets of gates, to suit the mountain range of locks. These have been laid away to meet casualties. Three of the previous spare gates have been used in replacing those carried away by the "Harriet Ross."

The scant supply afforded by the Grand river has been much felt during the past season; so much so, that the upper level was frequently, for weeks together, from one to two feet below the established height. This will, no doubt, be partially remedied by staunching the Dunnville dam, the works of which have been put in hands.

WORK OF CONSTRUCT

The work of constructing the guard gates above Thorold was completed on the opening of navigation, and has answered the purpose intended. The contractor (Mr. Brown) has fully sustained his well known reputation, in completing this work in a satisfactory manner.

The placing of these gates rendered it necessary to widen the channel above them

several hundred feet, to afford sufficient lay-by room for vessels. This excavation was a most expensive undertaking, owing to the severe frost and hardness of the soil. But, notwithstanding, the work was completed in due time at increased expense, but little excess of the estimate.

In consequence of the depth to which the large class of vessels have been laden, it has been necessary to maintain the water in the canal to the greatest possible height which the banks would admit of; and to render them more secure, it has been necessary to strengthen them in their weak places. Further outlay, for this object, will be required next year, towards effecting which there is (of the appropriation) in hand a sum of \$2,057.

The work of deepening and widening the canal above Allanburgh has been steadily going on throughout the season, with the number of dredges, or excavators, and other equipment, as mentioned in my last annual report. The contractors' operations have been considerably retarded in consequence of the continuance of rough weather, which produced such a swell upon lake Erie, as to prevent the scows from being towed out into the lake, for the purpose of wasting the excavation; from which cause the work has not progressed so rapidly as was anticipated, and which the plans would otherwise have warranted. The appropriation required for carrying on the dredging operations next year will be \$5,000.

In the estimate is included a sum for the construction of a towing path on the east side of the canal, from Hurst's to Marlatt's bridge, a distance of 4800 feet, and widening the same throughout—the excavation from which to be used (so far as practicable) in the towing path is on the west side of the canal, and has some crooked turns, in which the strong winds from the south-west drive the vessels, from whence they cannot be moved until the winds subside, frequently causing much delay.

The construction of a truckway on the east side will admit of vessels passing without incurring such detention, and therefore effect much saving of time in passing them through the canal. This improvement will require an appropriation of \$18,100. The sum to be derived from this outlay will fully justify the expenditure. Herewith are submitted the following accompanying schedules, viz.:

Schedule Nos 1 and 2 (not printed) show the several appropriations made by the Legislature, with the expenditure to the 1st December, 1861.

Schedule No. 3 (not printed) gives the cost of the repairs and management of the canal for this year.

The expenditures have been paid from the Tolls:

The cost of repairs is.....	\$16,932.11
The cost of management.....	30,621.58
Total for repairs and management.....	\$56,553 69

Included in the repairs is the cost of reconstructing the hydraulic aqueduct, proper gates for the mountain locks, and furnishing materials for the construction of the gates, and the making further canal repairs, amounting to \$6,367. Of the foregoing making the repairs, there has been levied and collected from vessels, for damages to them to the gates and other works of the canal, \$2,267.80. Notwithstanding this delay, the expenditure for repairs has been \$6,238 less than last year.

In the management there is also a decrease in favor of this year amounting to \$3,390; a total decrease in this Schedule for this year, against that of last year, of \$9,629.

Schedule No. 4 shews the water power and other property leased on this canal, with the rents, &c.

The amount of property and water power leased is....	\$8,988.43
The amount collected in 1861 is.....	8,967 20
The arrears remaining due to 1st December, are.....	6,266 17

As shown in the annual rent are the aggregate of the leases. In several cases the premises have been abandoned, and no water used for some time; the lessees having neglected to pay the rent, the premises allowed to fall into a state of ruin or otherwise damaged.—In the arrears shown upon the schedule cannot be collected, and must be looked

upon as bad debts. Where it is practicable to collect the arrears, legal steps are being taken to effect that object; and where not, the department to resume possession of the premises.

Schedule No. 5 shews the land, &c., disposed of—not being required for Canal purposes. To enforce the collection of these arrears, legal steps are taken.

Schedule No. 6 gives the vessels upon which penalties have been imposed in consequence of infringements of the Canal regulations by them.

Schedule No. 7 (not printed) gives an approximate estimate of the probable cost of making the Canal repairs for 1862, amounting to \$20,000. In this estimate is included the probable cost of the authorized, amounting to \$7,290, viz.:

Swing bridges with approaches over the Lock and Canal at Port Robinson.

Approaches and fenders to the Quaker and Buyer bridges.

Swing bridges with approaches over the Canal at Marshville.

Staunching the Dunnville dam.

Protection piles at Sulphur Creek and Haldimand waste weirs.

Appended is a statement shewing the revenue collected for the last three years; being 39 per cent over that of last year.

The number of sailing vessels and steamers which have passed through the Canal this year is 4,315, being 571 more than last year, and 430 more than during any previous year.

Trusting that the above, with the accompanying Schedules, will afford all the necessary information required from me,

I have the honor to be, Sir,

Your obedient servant,

S. D. WOODRUFF.

(Signed)

To T. TRUDEAU, Esq.
Secretary of Public Works,
Quebec.

WELLAND CANAL.

TABLE OF ITS REVENUE FOR THE LAST THREE YEARS.

PORT OF COLLECTION.	1859.	1860	1861
	\$ cts.	\$ cts.	\$ cts.
Colborne	81,305.63	116,033.55	174,474.37
Robinson	2,804.20	3,502.78	4,775.37
Maitland	1,152.29	1,685.31	6,912.37
Dunnville	3,667.33	5,261.40	5,015.00
St. Catharines.....	1,251.78	1,259.71	1,412.10
Dalhousie	33,964.55	37,477.90	36,275.45
	124,145.78	165,220.65	229,769.66
Collected on Rents.....	10,545.91	7,686.97	8,967.20
Do. on Lands, &c., sold.....	200.00	1,737.07	25.00
Do. on Fines and damages.....	4,176.82	2,116.10	2,267.90
	139,068.51	175,760.79	241,029.46

Number of sailing Vessels and Steamers passed through the Canal for 8 years.

	Vessels.
In 1854.....	3,690
— 1855.....	3,816
— 1856.....	3,885
— 1857.....	3,604
— 1858.....	3,728
— 1859.....	2,589
— 1860.....	3,744
— 1861.....	4,315

WELLAND CANAL.

SCHEDULES 4 TO 6 INCLUSIVE.

Annual Rents of Water Power—Lands sold—Fines and Damages, etc.

WELLAND CANAL

SCHEDULE No. 4.—Statement shewing the annual rents of *Water Power* leased, and the rents of other property situated on the line of the WELLAND CANAL, with yearly rent, together with arrears of rent, the amounts of payments made in 1861, with balance due 1st December.

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent with Arrears, to 1st July, 1861.	Amount of Payments to 1st Dec., 1861.	Balance due on Rents to 1st Dec., 1861.	REMARKS.
Port Dalhousie ...	Robert Laurie & Co....	R. Laurie & Co.....	1st Run Stones..... 2nd do 3rd do Coin Cracker..... Ground Rent..... Interest on cost of Flume.. ..	\$ cts. 60 00 50 00 50 00 10 00 20 00 7 30	\$ cts. 197 30	\$ cts. 197 30	\$ cts. 165 50	
do	R. & J. Laurie	R. & J. Laurie.....	1st Run Stones..... 3rd do at \$50 each. Ground Rent..... Interest on cost of Flume....	60 90 150 80 20 00 10 00	197 30	197 30		
do	R. & J. Laurie	R. & J. Laurie.....	Lot ½ acre.....	240 00 20 00	240 00 20 00	240 00 20 00		
do	R. Morrison.....	W. Donaldson & Co.	1st Saw..... 1 Circular Saw..... Ground Rent... .. Interest on cost of Flume....	80 00 16 00 20 00 5 00				{\$40 was deducted from the amount before shewn, in consequence of 1 circular saw not having been used as per letter, No. 36,140, 3rd April, 1861.
do	Alex. Muir.....	A. Muir.....	Floating Dock, \$ 76..... Dry Dock, 100.....	121 00 176 00	363 00 176 00	197 50 176 00	165 50	
do	Donaldson, Andrews & Ross.....	Donaldson & Co.....	Dry Dock and Service Ground	100 00	100 00	50 00	50 00	

Lock No. 2.....	James Mavor.....	John L. Hannoy.....	John Johnson ..	Bank of U. Canada.	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	32nd	33rd	34th	35th	36th	37th	38th	39th	40th	41st	42nd	43rd	44th	45th	46th	47th	48th	49th	50th	51st	52nd	53rd	54th	55th	56th	57th	58th	59th	60th	61st	62nd	63rd	64th	65th	66th	67th	68th	69th	70th	71st	72nd	73rd	74th	75th	76th	77th	78th	79th	80th	81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th	101st	102nd	103rd	104th	105th	106th	107th	108th	109th	110th	111st	112nd	113rd	114th	115th	116th	117th	118th	119th	120th	121st	122nd	123rd	124th	125th	126th	127th	128th	129th	130th	131st	132nd	133rd	134th	135th	136th	137th	138th	139th	140th	141st	142nd	143rd	144th	145th	146th	147th	148th	149th	150th	151st	152nd	153rd	154th	155th	156th	157th	158th	159th	160th	161st	162nd	163rd	164th	165th	166th	167th	168th	169th	170th	171st	172nd	173rd	174th	175th	176th	177th	178th	179th	180th	181st	182nd	183rd	184th	185th	186th	187th	188th	189th	190th	191st	192nd	193rd	194th	195th	196th	197th	198th	199th	200th	201st	202nd	203rd	204th	205th	206th	207th	208th	209th	210th	211st	212nd	213rd	214th	215th	216th	217th	218th	219th	220th	221st	222nd	223rd	224th	225th	226th	227th	228th	229th	230th	231st	232nd	233rd	234th	235th	236th	237th	238th	239th	240th	241st	242nd	243rd	244th	245th	246th	247th	248th	249th	250th	251st	252nd	253rd	254th	255th	256th	257th	258th	259th	260th	261st	262nd	263rd	264th	265th	266th	267th	268th	269th	270th	271st	272nd	273rd	274th	275th	276th	277th	278th	279th	280th	281st	282nd	283rd	284th	285th	286th	287th	288th	289th	290th	291st	292nd	293rd	294th	295th	296th	297th	298th	299th	300th	301st	302nd	303rd	304th	305th	306th	307th	308th	309th	310th	311st	312nd	313rd	314th	315th	316th	317th	318th	319th	320th	321st	322nd	323rd	324th	325th	326th	327th	328th	329th	330th	331st	332nd	333rd	334th	335th	336th	337th	338th	339th	340th	341st	342nd	343rd	344th	345th	346th	347th	348th	349th	350th	351st	352nd	353rd	354th	355th	356th	357th	358th	359th	360th	361st	362nd	363rd	364th	365th	366th	367th	368th	369th	370th	371st	372nd	373rd	374th	375th	376th	377th	378th	379th	380th	381st	382nd	383rd	384th	385th	386th	387th	388th	389th	390th	391st	392nd	393rd	394th	395th	396th	397th	398th	399th	400th	401st	402nd	403rd	404th	405th	406th	407th	408th	409th	410th	411st	412nd	413rd	414th	415th	416th	417th	418th	419th	420th	421st	422nd	423rd	424th	425th	426th	427th	428th	429th	430th	431st	432nd	433rd	434th	435th	436th	437th	438th	439th	440th	441st	442nd	443rd	444th	445th	446th	447th	448th	449th	450th	451st	452nd	453rd	454th	455th	456th	457th	458th	459th	460th	461st	462nd	463rd	464th	465th	466th	467th	468th	469th	470th	471st	472nd	473rd	474th	475th	476th	477th	478th	479th	480th	481st	482nd	483rd	484th	485th	486th	487th	488th	489th	490th	491st	492nd	493rd	494th	495th	496th	497th	498th	499th	500th	501st	502nd	503rd	504th	505th	506th	507th	508th	509th	510th	511st	512nd	513rd	514th	515th	516th	517th	518th	519th	520th	521st	522nd	523rd	524th	525th	526th	527th	528th	529th	530th	531st	532nd	533rd	534th	535th	536th	537th	538th	539th	540th	541st	542nd	543rd	544th	545th	546th	547th	548th	549th	550th	551st	552nd	553rd	554th	555th	556th	557th	558th	559th	560th	561st	562nd	563rd	564th	565th	566th	567th	568th	569th	570th	571st	572nd	573rd	574th	575th	576th	577th	578th	579th	580th	581st	582nd	583rd	584th	585th	586th	587th	588th	589th	590th	591st	592nd	593rd	594th	595th	596th	597th	598th	599th	600th	601st	602nd	603rd	604th	605th	606th	607th	608th	609th	610th	611st	612nd	613rd	614th	615th	616th	617th	618th	619th	620th	621st	622nd	623rd	624th	625th	626th	627th	628th	629th	630th	631st	632nd	633rd	634th	635th	636th	637th	638th	639th	640th	641st	642nd	643rd	644th	645th	646th	647th	648th	649th	650th	651st	652nd	653rd	654th	655th	656th	657th	658th	659th	660th	661st	662nd	663rd	664th	665th	666th	667th	668th	669th	670th	671st	672nd	673rd	674th	675th	676th	677th	678th	679th	680th	681st	682nd	683rd	684th	685th	686th	687th	688th	689th	690th	691st	692nd	693rd	694th	695th	696th	697th	698th	699th	700th	701st	702nd	703rd	704th	705th	706th	707th	708th	709th	710th	711st	712nd	713rd	714th	715th	716th	717th	718th	719th	720th	721st	722nd	723rd	724th	725th	726th	727th	728th	729th	730th	731st	732nd	733rd	734th	735th	736th	737th	738th	739th	740th	741st	742nd	743rd	744th	745th	746th	747th	748th	749th	750th	751st	752nd	753rd	754th	755th	756th	757th	758th	759th	760th	761st	762nd	763rd	764th	765th	766th	767th	768th	769th	770th	771st	772nd	773rd	774th	775th	776th	777th	778th	779th	780th	781st	782nd	783rd	784th	785th	786th	787th	788th	789th	790th	791st	792nd	793rd	794th	795th	796th	797th	798th	799th	800th	801st	802nd	803rd	804th	805th	806th	807th	808th	809th	810th	811st	812nd	813rd	814th	815th	816th	817th	818th	819th	820th	821st	822nd	823rd	824th	825th	826th	827th	828th	829th	830th	831st	832nd	833rd	834th	835th	836th	837th	838th	839th	840th	841st	842nd	843rd	844th	845th	846th	847th	848th	849th	850th	851st	852nd	853rd	854th	855th	856th	857th	858th	859th	860th	861st	862nd	863rd	864th	865th	866th	867th	868th	869th	870th	871st	872nd	873rd	874th	875th	876th	877th	878th	879th	880th	881st	882nd	883rd	884th	885th	886th	887th	888th	889th	890th	891st	892nd	893rd	894th	895th	896th	897th	898th	899th	900th	901st	902nd	903rd	904th	905th	906th	907th	908th	909th	910th	911st	912nd	913rd	914th	915th	916th	917th	918th	919th	920th	921st	922nd	923rd	924th	925th	926th	927th	928th	929th	930th	931st	932nd	933rd	934th	935th	936th	937th	938th	939th	940th	941st	942nd	943rd	944th	945th	946th	947th	948th	949th	950th	951st	952nd	953rd	954th	955th	956th	957th	958th	959th	960th	961st	962nd	963rd	964th	965th	966th	967th	968th	969th	970th	971st	972nd	973rd	974th	975th	976th	977th	978th	979th	980th	981st	982nd	983rd	984th	985th	986th	987th	988th	989th	990th	991st	992nd	993rd	994th	995th	996th	997th	998th	999th	1000th
St. Catherine's.....	St. Catherine's Water Power Co.....	St. Catherine's Water Power Co.....	Morris & Neelon.....	Morris & Neelon.....	H. H. Collier,	Thomas Towers.....	John Smith & Co....	Wd. Canal Loan Co.	Gordon & Mackay....	John Johnson ..	Bank of U. Canada.	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	32nd	33rd	34th	35th	36th	37th	38th	39th	40th	41st	42nd	43rd	44th	45th	46th	47th	48th	49th	50th	51st	52nd	53rd	54th	55th	56th	57th	58th	59th	60th	61st	62nd	63rd	64th	65th	66th	67th	68th	69th	70th	71st	72nd	73rd	74th	75th	76th	77th	78th	79th	80th	81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th	101st	102nd	103rd	104th	105th	106th	107th	108th	109th	110th	111st	112nd	113rd	114th	115th	116th	117th	118th	119th	120th	121st	122nd	123rd	124th	125th	126th	127th	128th	129th	130th	131st	132nd	133rd	134th	135th	136th	137th	138th	139th	140th	141st	142nd	143rd	144th	145th	146th	147th	148th	149th	150th	151st	152nd	153rd	154th	155th	156th	157th	158th	159th	160th	161st	162nd	163rd	164th	165th	166th	167th	168th	169th	170th	171st	172nd	173rd	174th	175th	176th	177th	178th	179th	180th	181st	182nd	183rd	184th	185th	186th	187th	188th	189th	190th	191st	192nd	193rd	194th	195th	196th	197th	198th	199th	200th	201st	202nd	203rd	204th	205th	206th	207th	208th	209th	210th	211st	212nd	213rd	214th	215th	216th	217th	218th	219th	220th	221st	222nd	223rd	224th	225th	226th	227th	228th	229th	230th	231st	232nd	233rd	234th	235th	236th	237th	238th	239th	240th	241st	242nd	243rd	244th	245th	246th	247th	248th	249th	250th	251st	252nd	253rd	254th	255th	256th	257th	258th	259th	260th	261st	262nd	263rd	264th	265th	266th	267th	268th	269th	270th	271st	272nd	273rd	274th	275th	276th	277th	278th	279th	280th	281st	282nd	283rd	284th	285th	286th	287th	288th	289th	290th	291st	292nd	293rd	294th	295th	296th	297th	298th	299th	300th	301st	302nd	303rd	304th	305th	306th	307th	308th	309th	310th	311st	312nd	313rd	314th	315th	316th	317th	318th	319th	320th	321st	322nd	323rd	324th	325th	326th	327th	328th	329th	330th	331st	332nd	333rd	334th	335th	336th	337th	338th	339th	340th	341st	342nd	343rd	344th	345th	346th	347th	348th	349th	350th	351st	352nd	353rd	354th	355th	356th	357th	358th	359th	360th	361st	362nd	363rd	364th	365th	366th	367th	368th	369th	370th	371st	372nd	373rd	374th	375th	376th	377th	378th	379th</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

WELLAND CANAL.

SCHEDULE No. 4.—Statement showing the Annual Rents of Water Power leased, &c.—Continued.

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent with Arrears to 1st July, 1881.	Amount of Payments to 1st Dec., 1881.	Balance due on Rents to 1st Dec., 1881.	REMARKS.
			<i>Brought forward.....</i>	\$ cts. 2931 98	\$ cts. 3613 98	\$ cts. 2638 46	\$ cts. 975 50	
Lock No. 15.....	John Brown.....	John Brown.....	1 Run of Stone with Cracker Additional power..... Ground Rent.....	60 00 80 00 20 00				
				160 00				
Lock No. 20.....	W. B. Hendershot.....	W. B. Hendershot.....	1st Saw..... 2nd Saw..... 1 Circ. Saw for edging Boards Ground Rent..... Interest on cost of Flume.....	80 00 60 00 16 00 20 00 5 00	160 00	160 00		
				181 00	181 00		181 00	
Lock No. 21.....	William Beatty.....	William Beatty.....	1st Saw..... 2nd Saw..... 3 Circular Saws at \$16 each. Ground Rent..... Interest on cost of Flume.....	80 00 60 00 48 00 20 00 8 00				
				216 00	216 00	216 00		
Lock No. 22.....	William Beatty.....	William Beatty.....	Wheel for grinding Bark &c. Interest on cost of Flume.....	60 00 3 00				
				63 00	63 00	63 00		

do	W. H. Ward,	John McDougall,	2 Planting Machines and 8 Circular Saws,	50 00	250 00	230 00	Rent paid to 1st Jan'y., 1862.
do	John Brown,	John Brown,	Wharf Lot,	40 00	100 00	100 00	
Lock No. 24,	Jacob Keeler,	Oswald's Assignees,	1st Run of Stone,	00 00			
			2nd, 3rd and 4th do at \$50 each	150 00			
			Interest on cost of Flume, ..	12 00			
do	Brown & Ross,	John Brown,	1st Run of Stones,	222 00	111 00	111 00	
			2nd do	60 00			
			Ground Rent,	20 00			
do	Park & Cowan,	D. Thompson's Es- tate,	1st Run of Stones,	130 00	105 00	105 00	
			2nd and 3rd do at \$50 each	60 00			
				100 00			
Lock No. 25,	Alex. Christy,	J. Woodward's Es- tate,	1st Run Stones,	160 00	240 00	160 00	Mill burnt.
			2nd and 3rd do at \$50 each	60 00			
				100 00			
do	John Brown,	John Brown,	1st Run Stones with Cracker	160 00	240 00	240 00	Mill shut down, no water used.
			Ground Rent,	60 00			
				20 00			
				80 00			
Thorold,	Nutty & Woodward,	Assignees,	Cotton Factory, use of Water,	100 00	80 00	80 00	
					250 00	250 00	No water used for this year, and the proceedings stayed for the collection of the arrears as per letter No. 37567, of the 18th July, 1861.
Allanburgh,	Wright & Duncan,	Morris & Neelson,	1st Run Stones,	60 00			
			2nd and 3rd do at \$50 each, ..	100 00			
			Carding Machine,	50 00			
			Additional Run Stone,	50 00			
			Interest on cost of Flume, ..	00 67			
				820 87			
			Carried over,	4640 50	6357 56	4031 06	1726 50

WELLAND CANAL.

SCHEDULE No. 4.—Statement shewing the Annual Rents of Water Power leased, &c.—Continued.

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent with Arrears to 1st July, 1861.	Amount of Payments to 1st Dec., 1861.	Balance due on Rents to 1st Dec., 1861.	REMARKS.
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	
			<i>Brought forward.....</i>	4640 56	6357 56	4631 06	1726 50	
			Less, 1 Run Stone removed..	50 00				
				270 67	286 31	270 67	15 64	{ \$1954 was deducted from the amount before shewn for land conveyed in lieu thereof, as per letter of authority No. 31,403, of the 27th March, 1860.
Allanburgh	W. H. Merritt.....	Pr. Estate.....	1st Saw.....	80 00				{ Abandoned premises. No rent carried forward since Report of 1859.
			Interest on cost of Flume....	7 10				
				87 10	261 30	261 30		
do	J. & W. Bowman.....	Not occupied.....	Water equal to 1 Run Stone..	60 00				
			Interest on cost of Flume....	6 00				
				66 00	231 00		231 00	
do	Wm. Pennock.....	D. Williams.....	Shingle Factory.....	66 00	66 00	66 00		
do	Tucker & Rannie.....	Tucker & Rannie...	Saw Mill.....	600 00	900 00	900 00		
Pt. Robinson.....	McFarland & Lemon.	Now J. & J. Abbey.	Saw Mill Site.....	150 00	175 00	175 00		
do	McFarland & Abbey.	do do	Dry Dock.....	79 20	316 80		316 80	In hands of Sol. for collection.
do	Donaldson & McFarland.....	Coleman	1st Run Stone.....	60 00				
			2nd and 3rd do at \$50 each.	20 00				
			Ground and House Rent....	6 00				
			Interest on cost of Flume...	86 00	86 00	86 00		

WELLAND CANAL.

SCHEDULE No. 4.—Statement showing the Annual Rents of Water Power leased, &c.—Continued.

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent with Arrears to 1st July, 1861.	Amount of Payments to 1st Dec., 1861.	Balance due on Rents to 1st Dec., 1861.	REMARKS.
Marshallville	John Graybiel.....	M. Graybiel.....	<i>Brought forward.....</i>	\$ cts. 7,124 53	\$ cts. 11,312 47	\$ cts. 7,400 31	\$ cts. 3,912 16	
Broad Creek.....	L. McCallum.....	L. McCallum.....	2 Run Stones and Ground Rent	180 00	180 00	180 00	.....
			Upright Saw.....	80 00				
			2 Circular Saws at \$50 each.....	32 00				
			Ground Rent.....	20 00				
			Interest on cost of Flume.....	11 00				
Pt. Maitland.....	Imlack & Hickey	L. McCallum.....	1st Run Stones.....	143 00	143 00	143 00	.....
			2nd do at \$50 each.....	60 00				
			Ground Rent.....	50 00				
			Interest on cost of Flume.....	20 00				
				8 00				
Dannville.....	Jacob Turner.....	R. Chambers.....	1st Run Stones.....	138 00	307 00	276 00	621 00	Lessees failed, and no Water used for several years, and up to October, present proprietor has paid arrears up to time of stoppage and allowed further time for settlement.
			2nd do	60 00				
			1st Saw	50 00				
			2nd do	80 00				
			Ground Rent.....	60 00				
				28 00				
				270 00				
			Less 1, until Lake Erie level be adopted	90 00				
-do	Samuel Darling.....		1st Run Stones.....	180 00	180 00	180 00	.....
			2nd do	60 00				
				50 00				

WELLAND CANAL.

SCHEDULE No. 4.—Statement shewing the Annual Rents of Water Power leased, &c.—Continued.

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent with Arrears to 1st July, 1861.	Amount of Payments to 1st Dec., 1861.	Balance due on Rents, to 1st Dec., 1861.	REMARKS.
Dunaville.....	J. Brown & W. H. Merritt, Jr.....	John Brown.....	Brought forward.....	\$ cts. 8,210 38	\$ cts. 14,255 49	\$ cts. 8,376 66	\$ cts. 5,878 82	
			1st Run Stones with Cracker. Ground Rent.....	80 00 20 00				
			Interest on cost of Flume....	13 00				
				113 00				
Haldimand.....	John Oldfield.....	J. Oldfield.....	1st Saw..... 2nd do..... 1 Circular Saw..... Ground Rent.....	80 00 60 00 16 00 20 00	226 00	226 00		
			Less 3, until Lake Erie level be adopted.....	176 00 56 66				
			Additional machinery; 1 gang upright Saws; 1 Planing Machine; 3 Circular Saws for lathing; 1 for cross-cut- ting; 1 for bolting and 1 for sawing bolts.....	117 34				
do	J. Clarke & Brothers..	Thomas C. Street..	1st Saw..... Ground Rent.....	237 34 88 60 20 00	237 34		237 34	Mill burnt.
			Less 3, until Lake Erie level be adopted	100 60 33 83				
do	J. C. & H. R. Kirk- patrick	Kirkpatrick & Co... 1	Run Stone.....	66 67 60 60	100 00		100 00	Mill fallen into decay.

do	J. Beatty & R. Band	J. Beatty's Estate.	2nd and 3rd Run Stone at \$50	54 34 100 00	153 34	153 34	.....
			1st Run Stone	03 60			.....
			2nd do	50 00			.....
			Ground Rent	20 00			.....
			Interest on cost of Stone	19 20			.....
				140 20	149 20	149 20	.....
Pl. Colborne	Adam R. Scholfield	B. & L. H. Railway	Wharf Lot	26 00			.....
do	John Gordon	John Gordon	Wood Yard	25 00		37 50	.....
Pl. Robinson	Robt. Elliot	R. Elliot	Ground Rent of Storehouse from 1st October, 1853 to 1st July, 1860, at \$8 per year		12 50	12 50	.....
do	J. Donaldson	J. Donaldson	Ground Rent of Storehouse, formerly R. Elliot, from 1st July, 1860, to 1st July, 1861, at per year	8 00	54 00	54 00	.....
				8988 43	15233 37	.....	Transferred to J. Donaldson.
					8 00	8 00	.....
					15233 37	8966 17	.....

(Signed,)

THOMAS ADAMS,

Payr. Clerk.

WELLAND CANAL OFFICE, }
St. Catharines, Dec, 19th, 1861.

(Signed,)

S. D. WOODRUFF,
Supr. Welland Canal.

WELLAND CANAL.

SCHEDULE No. 5.—Schedule of Lands, &c., on the Welland Canal, sold to sundry persons, with the amount of Sales and Interest to 1st December, 1861, amount paid to 1st December, 1861, and the balance remaining due on the 1st December.

PURCHASERS.	Number of Lot.	Where situated.	Quantity.	Amount of Sale.	Amount of Interest to 1st Dec., 1861.	Amount of Sale and Interest to 1st Dec., 1861.	Amount paid to 1st Dec., 1859.	Amount paid in 1861 to 1st Dec.	Balance due the 1st December, 1861.	Remarks.
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	
James R. Benson, on be- half of Hydraulic Co.....	.....	Lots below Thorold.	211 a. 1 r. 17 perc.	8,454 25	4,672 06	13,126 31	2,010 85	.....	11,115 46	
Municipality of the County of Welland.....	Part of lot No. 27	Lands in Wainfleet.. do Humberstone do do ...	10,796 acres 2,048 do 68 do	12,912 00	5,866 03	18,778 03	3,309 56	.....	15,468 47	
Mark F ryant	Purchase of old timber in Hydraulic Aqueduct			25 00	.....	25 00	.....	25 00	.....
				21,391 25	10,538 09	31,929 34	5,320 41	25 00	26,583 93	

(Signed,)

S. D. WOODRUFF,
Superintendent, Welland Canal.

(Signed,)

THOMAS ADAMS,
Paymaster and Clerk.

WELLAND CANAL OFFICE,
St. Catharines, December 19th, 1861.

WELLAND CANAL.

TABLE No. 6—STATEMENT shewing the amount of Fines and Damages levied, the amount paid to the 1st December, 1861, and the Balance remaining due on the 1st December, 1861:—

Date.	Description of vessel, &c.	Name of vessel, &c.	Amount of Fines levied.	Amount of damages levied.	Am't. paid to 1st Dec., 1861.	Bal. due on 1st Dec., 1861.	Remarks.
			\$ cts.	\$ cts.	\$ cts.	\$ cts.	
April 22	Schooner.	'S. H. Lathrop'.....	00 00	2500 00	00 00	2500 00	
" 30	Steamer.	'St. Nicholas'.....	30 00	4800 00	00 00	4830 00	
May 2	Schooner.	'Wilson'.....	00 00	5 00	5 00	00 00	
April 30	do	'Mohagan'.....	00 00	1953 00	00 00	1953 00	
May 30	do	'Amelia'.....	00 00	1246 00	00 00	1246 00	
May 26	Propeller.	'Kentucky'.....	00 00	10 00	10 00	00 00	
May 15	Schooner.	'Cuba'.....	00 00	10 00	00 00	10 00	
Sept 19	do	'Lucy A. Blossom'.....	00 00	10 00	10 00	00 00	
Oct 24	do	'Echo'.....	10 00	00 00	10 00	00 00	
" 24	Steamer.	'Ranger'.....	00 00	20 00	20 00	00 00	
Nov 12	Schooner.	'W. F. Allan'.....	00 00	10 00	10 00	00 00	
Nov 30	do	'Chas. T. Richmond'.....	00 00	20 00	20 00	00 00	
Feb 13		Repairs fenders, &c. Colborne Railway Bridge.....	00 00	48 00	18 00	00 00	
April 11	Schooner.	'Bermuda'.....	00 00	10 00	10 00	00 00	
" 11	do	'Sov. of the Lakes'.....	00 00	8 00	8 00	00 00	
" 13	do	'Clayton'.....	00 00	2 00	2 00	00 00	
" 17	do	'Menchaba'.....	00 00	10 00	10 00	00 00	
" 18	Tug.....	'E. P. Dorr'.....	20 00	00 00	20 00	00 00	
" 19	Schooner	'Mathew McNair'.....	00 00	8 00	8 00	00 00	
May 1	Propeller	'Bay State'.....	00 00	8 00	8 00	00 00	
" 14	Schooner	'Henry Hagar'.....	00 00	22 00	00 00	22 00	
" 20	do	'Minnesota'.....	00 00	10 00	10 00	00 00	
" 23	Propeller	'Akron'.....	10 00	00 00	10 00	00 00	
" 27	Schooner	'Comely'.....	00 00	5 00	5 00	00 00	
" 27	Propeller	'Jefferson'.....	00 00	2 00	2 00	00 00	
June 3	Scow.	'J. Carl'.....	4 00	00 00	4 00	00 00	
" 7	Schooner.	'Chieftain'.....	00 00	67 00	67 00	00 00	
" 11	Steamer.	'Geo. Moffatt'.....	20 00	00 00	20 00	00 00	
" 11	Schooner.	'Sardina'.....	5 00	00 00	5 00	00 00	
" 11	do	'Cuyahoga'.....	00 00	25 00	25 00	00 00	
" 13	do	'Atlantic'.....	5 00	00 00	5 00	00 00	
" 21	do	'R. Campbell'.....	00 00	5 00	5 00	00 00	
" 22	Propeller	'Ontario'.....	00 00	2 00	2 00	00 00	
" 26	Schooner.	'Hyphen'.....	00 00	15 00	00 00	15 00	
July 9	do	'Frank Stuart'.....	00 00	8 00	8 00	00 00	
" 10	do	'Wm. B. Ogden'.....	00 00	15 00	15 00	00 00	
" 10	Barque	'Canada'.....	00 00	38 00	38 00	00 00	
" 15	Schooner.	'Sweet Home'.....	00 00	40 00	40 00	00 00	
" 22	do	'R. Campbell'.....	00 00	40 00	40 00	00 00	
" 23	Propeller.	'Akron'.....	10 00	00 00	10 00	00 00	
" 24	do	'Buckeye'.....	00 00	32 00	32 00	00 00	
" 31	Schooner.	'J. G. Beard'.....	40 00	00 00	40 00	00 00	
August 20	do	'T. F. Parke'.....	00 00	40 00	40 00	00 00	
" 21	do	'T. F. Parke'.....	00 00	20 00	20 00	00 00	
		Carried over.....	204 00	11124 00	642 00	10686 00	

WELLAND CANAL.

SCHEDULE No. 6.—STATEMENT shewing the amount of Fines and Damages levied the amount paid to the 1st December, 1861, and the Balance remaining on the 1st December, 1861:—

Year.	Date.	Description of vessel, &c.	Name of vessel, &c.	Amount of Fines levied.	Amount of damages levied.	Am't. paid to 1st Dec., 1861.	Bal'nce due 1st Dec., 1861.	Rem
			<i>Brought forward..</i>	204 00	\$ cts. 11124 00	\$ cts. 642 00	\$ cts. 10686 00	
1861...	Aug. 22....	Schooner..	' Darien'	25 00	00 00	25 00	00 00	
"	" 22..	(Raft)	Thos. Forsyth	00 00	37 48	37 48	00 00	
"	" 22..	(do)	' E. Deedes'	00 00	30 00	30 00	00 00	
"	Sept. 22....	Schooner..	' Mary Frances'	00 00	10 00	10 00	00 00	
"	" 9....	(Raft)	' J. Cameron'	00 00	160 00	160 00	00 00	
"	" 19....	(do)	' E. Deedes'	00 00	116 00	116 00	00 00	
"	" 20....	Schooner..	' Buckingham'	00 00	84 00	84 00	00 00	
"	Oct. 2....	do ..	' Harriet Ross'	00 00	1123 32	1123 32	00 00	
"	Nov. 3....	Tug	' Eva'	00 00	30 00	30 00	00 00	
"	" 16....	Schooner..	' Queen City'	00 00	10 00	10 00	00 00	
				\$229 00	\$12724 80	\$2267 80	\$10686 00	

(Signed,)

S. D. WOODRUFF,
Superintendent Welland Canal.

(Signed,)

THOMAS ADAMS,
Paymaster and Clerk.

WELLAND CANAL OFFICE,
ST. CATHERINES, December 19th, 1861.

APPENDIX C.

ANNUAL REPORT OF THE SUPERINTENDING ENGINEER OF LACHINE AND BEAUHARNOIS CANALS.

LACHINE CANAL OFFICE,
Montreal, 13th January, 1862.

SIR,—I beg herewith to submit the following annual report on the works under my charge, for the year ending the 31st December, 1861:

BEAUHARNOIS CANAL.

This canal was opened, for the passage of vessels, on the 21th day of April, and closed on the third day of December: making a navigable season of two hundred and twenty-four days. During this time the trade was only interrupted eighteen hours, caused by the steamer "Walter Shanly" coming in contact and carrying away the lower gates at lock No. 13; this accident occurred on the 14th day of October.

The cost of repairs on this canal has been much larger than was anticipated, caused in part by the large increase in the trade, and by the freshets of last winter, and almost constant rains during a large portion of the summer, which had the tendency to soften the bank, causing slides in the outer slopes and injury to the slope walls, and clogging up the ditches. That portion of the dykes on Grand Isle and through Hungry Bay, which was nearly destroyed by the storms of November, 1860, has been thoroughly rebuilt, and well protected with stone: they are now in good order.

The main dam at the head of the canal still requires constant attention and repairs.

The main banks have been maintained in the usual good order, and some 4,200 feet in length of the west bank at the basin below the guard lock raised some twenty inches in height, and the face well protected with stone. Many portions of the other banks are low and should be raised next season. The inside face of the bank above and below the weirs at locks 11, 12, and 13, should also be protected with stone.

The culverts and ditches have also received especial attention and a thorough cleaning, which now forms a large item in the annual expenditure for repairs; they are now in good order.

The superstructure of the pier and breakwater at Grosse Point, has been substantially rebuilt, and will, no doubt, be of great service to vessels trading on this route. The superstructure of the pier at the upper entrance of the canal is in a decayed and ruinous state, and must be rebuilt. The wharves and pier at the lower entrance are in good order, but they did not afford sufficient accommodation for the increased trade of the past season. Should this increase prove permanent, it will be necessary to extend the south pier some 300 feet for its accommodation, which can be done at a small expense.

The locks are generally in good order. The walls, from surface water in the lower reaches, should (if the weather is suitable) be pointed before opening the canal next spring.

The gates and fixtures, with but few exceptions, are in good working order. A new pair have been inserted at the lower recess of lock No. 6, and the old gates hauled out and thoroughly repaired. A new foot-bridge is required for one of the upper gates. New friction rollers have been placed in the lower gates at lock No. 7. One of the upper gates at lock No. 8 requires a new foot-bridge; these upper gates are old, but with care they may last another season. The upper gates at lock No. 10 have been renewed with a pair of old repaired gates that were held in reserve as spare gates. The friction rollers in the lower gates at lock No. 11 must be renewed. New friction rollers have to be inserted in the lower gates at lock No. 12; a new foot-bridge is required on one of the upper gates. The lower gates at lock No. 13, that were broken by the steamer "Wal-

ter Shanly," have been hauled out and are being repaired. Portions of the retaining walls above and below locks Nos. 11, 12, and 13, should be rebuilt before opening the canal next season.

There are now but two pairs of spare lower gates in this canal, and one pair under repairs, with one pair of spare upper gates on hand, and two pairs under contract; making in all three full sets, which under ordinary circumstances should be sufficient; but in order to be fully prepared for any emergency, at least one new pair should be provided for the guard lock, and one full set for lock No. 8.

The swing bridges at locks 7, 8, 10, and 13, have been repaired, and timber will be prepared this winter for repairing those at locks Nos. 11, 12, and 14.

The ferry scows are in good order. The docking at landings of No. 1 must be rebuilt.

The waste weirs and farm bridges are generally in good order. The expense of maintenance for the incoming year will be light.

The lock house will only require ordinary repairs.

Statements in detail of the amounts collected for fines and damages amounting to \$1,278.18 cts., and an estimate of the probable amount required for ordinary repairs, amounting to \$7,765 will be forwarded herewith.

LACHINE CANAL.

This canal was opened on the 24th day of April and closed for the season on the 4th day of December, giving a navigable season of 225 days, which has been one of the most prosperous on record.

Early in the month of April it became quite evident that the old flour sheds would not afford sufficient accommodation for that branch of the trade; these circumstances having been represented to the department, instructions were received for the erection of temporary flour sheds and for planking the angle between basins 2 and 3.

The work was at once commenced, and the angle, containing 2,500 square feet, planked, and two sheds erected; which increased the shed accommodation 13,680 square feet, and was considered a great acquisition to that branch of the trade; all of which incurred an expenditure of \$2886.29.

The booms for the timber basin at Lachine, referred to in report for 1860, were fully completed, and brought into use in the month of May, which has given general satisfaction to that branch of the trade, and at the same time, protects the navigable channel from obstructions by floating timber or rafts.

The work connected with the enlargement of the rock cut near Lachine was commenced early in July, and five drilling machines, driven by horse-power, kept at work until the month of November. A large number of derricks were also erected, and preparations made for coffer-dams, for pumping, &c., as soon as the water should be shut out of the canal, which was done on the fifth of December, when the work was vigorously commenced, and is now progressing satisfactorily.

The pier at the head of Lock No. 4 was extended 135 feet during the months of February and March, and is also a great improvement to navigation at the point.

The pier head at Lachine is still in an unfinished state; but such portions of the main walls as were found defective have been efficiently repaired.

The mechanical structures connected with this canal have been maintained in good working order: the lower gates at lock No. 4 have been removed and a new pier inserted; the old gates will be hauled out and repaired this winter. New bumping posts and fender timbers have been prepared for Locks Nos. 2, 3, 4, and 5, and those at 3 and 4 brought into use. A portion of the north wing wall, at the upper entrance of lock No. 4, has been badly shaken and broken by vessels striking it while entering the lock, and must be taken down and rebuilt before opening the canal. The chamber and lower wing walls of lock No. 2 should be pointed, and the timber breast at the head of the lock repaired and strengthened. New fender timbers are required for the gates at Locks Nos. 3 and 4. The lower mitre sills of these locks have suffered severely by heavy laden vessels striking them, and must also be repaired and partially removed. There are five pairs of spare gates in reserve on this canal.

examining the bridges, the bottom timbers in all of them are found to be more or less decayed. The timber for repairing the Montreal and Wellington street bridges is now prepared,—the other three may pass another season with ordinary repairs. A portion of the east end of the centre pier at Brewster's bridge must be rebuilt. A new towing bridge is required across the old canal at Lachine. Two coverings of 3 inch plank have been worn through by the traffic over the Wellington bridge during the past season, it is now quite evident that this bridge cannot safely accommodate the traffic between the city and St. Charles and the city.

Plans for a new bridge above lock No. 3 were prepared and forwarded to the department early in the season, which, if constructed, would relieve the Wellington bridge, at the same time, afford a great and much required accommodation to the west end of the city.

The weirs for regulating the water at Lachine and Montreal, are in good order. The landing from the weir at the lower end of basin No. 2 will require repairs. Great damage has been experienced on the reaches below locks 3 and 4, in consequence of water, caused principally by the large amount of water drawn from the canal by the mills on the south side of basin No. 2, and from the incapacity of the regulating-weirs at locks Nos. 3 and 4. Plans and specifications for the construction of suitable piers at these locks have been prepared, and the work is about being placed under contract, which, when completed, will afford sufficient facilities for passing all the water that can be supplied through the canal; but it will still be necessary to fix some limits to the amount of water these mills are entitled to use, before the navigation can be properly maintained.

The difficulty of passing the Grand Trunk Railway Bridge is still much complained of. This difficulty arises from the pier being placed in the centre of the channel, without leaving the slopes of the banks a sufficient distance above and below to enable large vessels to pass without grounding.

The banks, slopes, walls, wharves, and flour sheds will only require ordinary repairs. The wharfage accommodation at the Montreal terminus of the canal was found quite ample for the trade of the past season.

The completion of St. Gabriel basin, in accordance with the plan and specification passed during the past season, would be quite sufficient for all present demands, and at the same time afford available space for additional grain and flour stores which must be added before forwarders on the St. Lawrence can compete successfully with other routes. Basin No. 2 should also be deepened to 16 feet, when it would admit the largest portion of the sailing vessels that now visit Montreal, when they could receive their cargoes of flour or grain directly from the mills, stores, or flour sheds on that basin.

The dredge has been employed a large portion of the season in this basin, from which 1600 cubic yards have been excavated, and there is still more to be done.

This basin has been gradually filling up for years; the current is now so great that the largest portion of the silt and sediment floating in the canal is brought down to this basin, where it settles; and some portions that were dredged in 1860 will require cleaning in 1862.

The dredge and scows will require caulking, the upper portion of the dredge to be repaired and the engine repaired.

The wall in front of the mills should be pointed and grouted as early in the spring as the weather will admit of.

Statements of the amounts collected for fines and damages, amounting to \$626 70, and an estimate of the probable cost of repairs for 1862, amounting to \$9,420 00, will be enclosed.

CHAMBLY CANAL.

This canal was opened on the 25th day of April, and closed for the season on the third of December. During this time, the trade was interrupted four days. The first delay was caused by the barge No. 11, of Sorel, striking the lower gates of the entrance lock at Chambly, which rendered it necessary to insert a new pair, causing a delay of two days, the second and third of September. The second delay took place on the first and second days of October, caused by an old steam dredging vessel sinking in lock No. 5.

While the trade on the St. Lawrence canals has increased fully 50 per cent during the current year, it has decreased in about the same ratio on this canal, caused by the unsettled state of the markets for lumber in the neighboring States.

A heavy expense was necessarily incurred during the past winter in protecting the canal banks from damage by floods caused by the great depth of snow and sudden thaws, which often filled the canal in a single night, so that it overflowed the banks.

A by-wash has since been built at the mouth of Wood's creek, which will allow the water from the creek to pass directly into the river, instead of filling the canal during the winter, as formerly.

A new pair of lock-gates for the entrance lock at Chambly, have also been built, and brought into use; some 360 feet length of wharf at St. Johns has been thoroughly repaired. A landing wharf at Chambly has also been built, and such other general repairs made to the banks and mechanical structures as were found necessary for the maintenance of navigation. A large amount of deposit was also removed from the canal bottom previous to its being opened last spring.

The locks are generally in good order. The upper wings and recess walls of lock Nos 1 and 7 leak badly, and will soon have to be rebuilt, but will stand for another year. New lower gates for lock No. 8 are now being built by the lock and bridge tenders.

The upper gates at lock No. 1 must also be removed, and a new pair that are now on hand inserted at lock No. 4, and the upper gates repaired. The mitre side of lock No. 5 is also out of repair.

The bottom timbers of bridges Nos. 6 and 8 must be renewed, and Nos 4 and 5 repaired.

The bottom of Fryer's by-wash must also be thoroughly examined and repaired.

There is still some 250 feet of the superstructure of the wharf at St. John's that is quite rotten, and should be repaired.

Should the trade over this route resume the former activity, much difficulty would be experienced by large heavy laden square bottomed vessels grounding on the deposits collected at the foot of slopes which extend far into the channel. The deposit is constantly accumulating, and its removal before opening the canal in the spring will be very expensive and difficult, caused by the large amount of surface water flowing into the canal at that season; it will, therefore, be necessary to remove it during the season of navigation by dredging.

A detailed estimate of the probable cost of repairs for 1862, amounting to \$6,820 with a statement of the amount collected for fines, damages, &c., amounting to \$201 91, will be found herewith.

ST. OUR'S LOCK AND DAM.

The navigation opened on the 16th day of April, and closed on the 3rd day of December.

The piers above and below the lock, and that portion of the dam east of the lock, were more or less damaged by the high water last April. These piers are but temporary structures: they are built on piles driven some ten feet apart in line of the pier, with a chamber, filled with stone, placed above line of low water to prevent them from raising;—the top of the piles are connected with caps on which the floor on longitudinal timbers rest; many of the timbers above low water line are quite rotten, and will no longer safely resist the force of ice and water in the spring, or concussions caused by vessels during the season of navigation, without being thoroughly repaired and strengthened.

The damages caused by high water have all been repaired. The old lock gates hauled out and taken apart, and the irons saved; the timbers in the segments of the upper gates have been renewed, a new anchor timber placed above the dam, and 170 toises of stone used in protecting and strengthening the dam and west side of the Island. More would have been done had the water fallen as usual during the latter part of the season; but the stormy weather and high water rendered it very dangerous and difficult approaching the dam for the purpose of unloading the stones when they were required.

The protection walls at each end of the dam are in good order. The west side of the Island is now well protected. The dam requires constant attention, and its stability de-

peuds very much on the protection of apron cribs being efficiently maintained. The apron cribs near the west abutment were filled in 1860, and those at the east abutment in 1861; the entire portion will require filling in 1862. Cavities are annually found immediately above the crib work of the dam, which appear to have been formed by leakage through the dam. Some 15 toise of stone have been used for filling these holes during the past season.

The estimate of the probable cost of repairs for 1862, amounting to \$2,950, will be found herewith.

ST. ANNE'S LOCK DAM.

The navigation at this point was opened on the 27th day of April, and successfully maintained until the second day of December, when it was permanently closed by ice for the season.

The unusual high water of last May caused considerable damage to the main pier or dam above the lock; the plank covering was so much decayed that a great portion of it was torn up and destroyed. The top timbers, on the outside of the Dam between the Lock and first angle above, were also swept away by the water.

In order to pass vessels, slashboards were placed on the gates to prevent the flow of water while vessels were being locked; and guard-posts placed at the head of the Lock, and on the pier.

The upper gates have been removed, and a new pair inserted; the old gates hauled out and the iron stripped off, and the sound timber used in the repairs.

The capstans formerly used for working the gates have been removed, and crabs, such as are used on the St. Lawrence canals, substituted, which work well, and effect an annual saving of about 420 dollars in working expenses. Some 550 feet of the long pier above the lock has been repaired, and covered with 3 inch plank; and 200 feet of the docking for supporting the embankment on the river side of the lock rebuilt, and the dock facing the mill-race, commenced in 1860, fully completed.

The watch-house for the lockmen has also been rebuilt, and the bridge and upper portion of the lock-gates painted. These works may now be considered in good order, and will only require ordinary repairs in 1862.

The superstructure of the guide-piers on the shoal, about a mile above the lock, should be rebuilt next season, and filled with stone; which can be done at a cost of about \$500.00.

A statement of the probable cost of repairs for 1862, amounting to \$915.00, will be forwarded herewith.

CARILLON AND GRENVILLE CANALS.

These canals were opened to the trade on the third day of May, and uninterruptedly maintained until the 29th day of November, when they were closed for the season.

When the management of these canals was assumed by the Provincial Government, they were found in a dilapidated and ruinous condition; the mechanical structures were fast going to decay, and many portions of the channel were filling up with silt and sediment. Large quantities of this sediment have since been removed, and such temporary repairs only made to the mechanical structures as were found absolutely necessary for the maintenance of the trade.

Previous to opening these canals last spring, portions of the old sluice frames and gates were removed and new balance beams placed in a few of the old gates, with such other repairs as it was thought would make them last the season.

Three passing places were made in the narrow portion of the Grenville canal, and the bottom cleaned at such points as most required it.

During the season of navigation, such repairs only have been made as were absolutely necessary, and consisted mainly in raising and protecting the banks at a few important points; lifting boulders from the channel at head of the Grenville canal, raising and maintaining the north river dam, repairing fences and roads, with such repairs to the lock-gates and fixtures as were absolutely required.

A few men are now employed in examining and repairing the lock and sluice gates, with the view of putting them in working order for the incoming season.

The maintenance of these canals in an efficient state, is of great importance to that portion of the Province drained by the Ottawa river, and even a temporary obstruction would be considered a great calamity. They also form a very important connection in the inland route between eastern and western Canada, and in the event of war with the neighboring States, now so much spoken of, their inefficiency might prove a national calamity.

There is not a pair of spare gates now on hand, and the old gates on the entire line are more or less decayed, and may give way at any moment, perhaps when most required. I would therefore respectfully suggest that at least three full sets of new gates be built during the present winter, and arranged so as to make them available for the largest number of locks, viz:—one set for the Carillon Canal; one set for the large and one set for the small locks on the Grenville canal. The banks at many points are but little above water-line;—they should be raised, and the bottom thoroughly cleaned before opening the Canal next spring.

A statement of the amount collected for fines and damages, amounting to \$32.00, with an estimate of the probable cost of repairs for 1862, will be forwarded herewith, amounting to \$3600.00.

NORTH RIVER IMPROVEMENT.

The navigation of this river, between the village of St. Andrews and the Ottawa river was obstructed by a shoal of rocks and boulders at a point known as Johnson's Rapids about one mile below St. Andrews, which prevented vessels passing that point at seasons of low water. The work of opening a channel across this shoal was commenced in July by the Superintendent of the Carillon and Grenville canals, who has succeeded in lifting the boulders and opening a channel of fifty feet in width, with five feet water across the shoal, so that vessels drawing four feet six inches can pass over it at all seasons, which at present is thought to be quite sufficient for the business of that locality. This improvement was made at a cost of \$681.51

I am, Sir,

Your obt. Servant,

T. TRUDEAU, Esquire,
Secretary Public Works. }

(Signed) JOHN G. SIPPPELL,
Supt. Engineer.

BAUHARNOIS CANAL.

STATEMENT of the amount, of fines and damages collected by order of the Superintendent for the year 1861.

Draw.	Names of Vessels.	Master or Owner.	Amount.	Remarks.
			\$ cts.	
17	Barge Arno.	Glassford and Co	2 00	Injury to ferry scow No. 2.
18	Schooner Sweet Home . .	Nichol	21 25	do north lower gates Lock 6.
19	Steamer St. Helen . . .	Smith	3 00	do upper wing wall Lock 8.
20	Propeller West	Henderson & Co..	80 00	do south wall, lower entrance
21	do	do	4 00	do north upper gate, lock 8.
22	Schooner J. G. Baird. . . .	Baird	2 00	do do do
23	Propeller West	Henderson & Co..	60 00	Violation of canal regulations.
24	Propeller Whitby	Black and Perry.	10 00	do do do
25	Barge Traveller.	Larkin	8 00	do do do
26	Schooner Perseverance. . .	Worthington	7 00	Injury to crab lock No. 10.
27	Barge St. Antoine	Marion	3 00	Violation of canal regulations.
28	Barge Deer	Deschamps	3 00	do do do
29	Steamer St. Lawrence . . .	Smith	25 00	Injury to south lower gates lock 13.
30	Schooner James Leslie . .	Franch	1 00	Violation of canal regulations.
31	Propeller St. Lawrence . .	Jacques, Tracy & Co.	10 00	do do do
32	do Oshawa	Black and Perry..	1 00	Injury to lower gates, lock 11.
33	Barge Advance	Chaffoy and Co..	0 65	do lantern lock No. 10.
34	do Henrietta	Connolly	1 00	do upper gates, Lock No. 8.
35	do Lyre	Henderson	8 00	do bumping post, lock No. 7.
36	do Fury	Brow	2 00	do lower gates, lock 7.
37	Steamer Walter Stanley..	Gildersleeve	1000 00	Carrying off lower gates, Lock 13
38	Barge Deer	Deschamps	4 00	Violation of canal regulations.
39	Steamer Ottawa	Jacques, Tracy & Co.	18 00	Injury to upper gates, lock 12.
			1278 18	

(Signed,)

PIERRE LAURENCEL,

Superintendent.

BAUHARNOIS CANAL,

December 4th, 1861.

LACHINE CANAL.

STATEMENT of the amount of fines and damages collected by order of the Superintendent, during the year 1861.

Date.	Names of Vessels.	Names of Owners.	Amount.	Remarks.
			\$ cts.	
May 22.....	Barge W. H. Hunt.....	Copeland.....	5 00	Abandoned and obstructing navigati
do 23	Steamer Oshawa.....	Black & Co.....	10 00	Damage to Brewster's bridge.
do 23.....	Schooner W. Elmere.....	Durand.....	10 00	do lock No. 2.
do 25.....	Barge Queen	Lefebvre.....	5 00	Abandoned and obstructing navigati
June 1.....	Schooner M. L. S. Scott ...	Scott	10 00	Damage to pier, Brewster's bridge.
do 1.....	do J. L. Wheeler.....	.....	15 00	do bridge at lock No. 2.
do 19.....	do Lachiel .....	.....	10 00	Violating canal regulations.
do 27.....	do D. McGinnes.....	Ritchie	20 00	Damage to Brewster's bridge.
do 27.....	do Defiance	Ruddock.....	100 00	do Wellington bridge.
do 27.....	do Don Donald.....	Lidlow	20 00	do bumping post.
do 28.....	do Col. Cook	Humphrey	12 00	Breaking crab winch.
do 29.....	Barge Lyre.....	Henderson.....	5 00	Damage stone pillar, Wellington bri
July 3.....	Schooner Trade Wind.....	Turner & Co	5 00	Breaking lamp post.
do 9.....	Barge Queen.....	.....	24 70	Abandoned and obstructing navigati
do 15.....	Raft.....	Douglas & Co.....	10 00	do do do
do 23.....	do	Corporation	10 00	do do do
do 31.....	do	Henderson	10 00	do do do
do 31.....	Barge Azilda	Segrin.....	10 00	Obstructing navigation.
do 31	do Neptune.....	Baker	5 00	Damage to angle timbers.
August 6...	do Matilda.....	Goudie.....	5 00	Abandoned and obstructing navigati
do 6...	do Nos. 5, 7 and 12.....	McNaughton	15 00	Obstructing navigation, Lock 1.
do 6...	Schooner R. Albert.....	.....	20 00	Damage to bumping post & masonry
do 21...	Barge Lark	Henderson	5 00	do angle timbers.
Sept. 19...	do No. 1.....	Bellanger.....	40 00	Unloading cord wood above G. lock.
do 26...	Steamer Experiment.....	Baker.....	5 00	Damage to gates, lock No. 4.
Oct. 18.....	Scow Rigaud.....	Charlebois.....	7 00	Breaking bridge lamp.
do 22.....	Steamer Magnet.....	Milloy.....	10 00	Damage to gates, lock No. 4.
do 28.....	Barge Glassmaker.....	Fortin	15 00	Damage to bumping post, &c.
do 29.....	Schooner J. G. Beard.....	Waggoner	5 00	Violation of canal regulations.
do 30.....	Steamer Champion.....	J. S. N. Co.	8 00	Damage Côte St. Paul bridge.
Nov. 1.....	Steamer Ottawa.....	Jacques & Co.....	5 00	do do do
do 1.....	Barge Marie	Tranchemontagne	5 00	Violation of canal regulations.
do 2.....	Schooner M. Star.....	Whyte.....	3 00	Injury to pier No. 15.
do 5.....	Barge Western.....	Henderson & Co.,	10 00	Damage to gates lock No. 3.
do 5.....	Schooner Sophia.....	Cinqmars.....	8 00	do do No. 4.
do 14.....	do Governor.....	Taylor.....	80 00	do bridge at Lachine.
do	do Two Brothers.....	.....	6 00	do Brewster's bridge.
do	do Lucinda.....	Arcand.....	20 00	do stone pillar, Lachine.
do	Steamer New Era.....	J. S. N. Co.....	8 00	Breaking gas lamp post.
do	Barge Leo	Glassford	6 00	do rack, Gould's Mill.
do	Schooner Scotland.....	McDonald.....	10 00	do bumping post, &c.
do	Barge A. Benshaw.....	Benshaw.....	10 00	Obstructing navigation.
do 22.....	Schooner Scotland.....	Johnson	20 00	Damage to lock No. 14.
do 30.....	Crib of Timber.	Duquette.....	4 00	Obstructing navigation.
			626 70	

(Signed,)

ALEXANDER BISSETT,
Superintendent.

LACHINE CANAL OFFICE,

. Montreal, 27th December, 1861.

CHAMBLY CANAL.

STATEMENT of the amount of fines and damages collected by order of the Superintendent for the year 1861.

Date.	Name of Vessel	Master or Owner..	Amount.	Remarks.
			\$ cts.	
May 11...	Barge No. 17.....	Richard, Captain	8 00	Damage to bridge No. 7.
do 17...	Boat S. W. Belay.....	A. Vaughan do..	1 50	do lock gates No. 8.
June 20...	Yacht Amherst.....	A. Collins do..	6 00	do bridge No. 3.
do 21...	Barge Philomène.....	Delorme do..	1 00	do bridge No. 4.
July 10...	Barge of Stmr. Rose.....	McNaughten do..	0 85	do bridge No. 7.
do 19...	Barge Marguerite.....	J. Sawyer do..	0 50	do lock gates No. 4.
Aug. 18...	.....	J. McNaughten Captain.....	10 00	Fines for towing more barges than allowed.
Sept. 2...	Barge No. 11 of Str. Rose.	Jas. McNaughten Captain.....	100 00	Damage to gates lock No. 6.
do 6...	Bateau (no name).....	F. Gai, Captain..	0 25	do to gate No. 6.
Oct. 20...	Barge Marie.....	V. Roberge do ...	10 00	do lock gate No. 8.
do 31...	Barge of Stmr. Erie.....	Stuart do...	2 00	do lock No. 5.
Nov. 4...	Barge May of Stmr. Aid...	Smith do...	3 00	do lock gates No. 4.
	Amount collected for wharfage.....		58 81	
			\$ 201 91	

(Signed,) P. T. CHARTIER,
Superintendent.

CARILLON AND GRENVILLE CANALS.

STATEMENT of the amount of fines and damages collected by order of the Superintendent for the year 1861.

Date.	Name of Vessel.	Master or owner.	Amount.	Remarks.
			\$ cts.	
May 6...	No. 4 of Sorel.....	.....	5 00	Injury wing wall lock No. 1.
do 11...	Barge Renfrew.....	.....	5 00	do do do do.
do 14...	Barge Matilda.....	.....	5 00	do do do do.
June 20...	Steamer Allan.....	.....	2 00	Setting fire to canal fence.
July 17...	Steamer Prescott.....	.....	5 00	Striking No. 1. gate.
do 25...	Barge St. Lawrence.....	.....	5 00	Striking wing wall at lock No. 3.
or. 2...	Steamer Buckingham.....	.....	5 00	Abusive language at lock No. 4.
	Total amount.....		32 00	

(Certified,)

(Signed,) JOHN THOMPSON,
Superintendent.

APPENDIX D.

ANNUAL REPORT OF THE SUPERINTENDENT OF THE RIDEAU CANAL.

NAVIGATION.

The canal was opened on the 1st of May, and the last vessel passed the locks on the 29th of November, making 213 days of navigation.

The failure of the lock at Brewer's lower mills, on the 3rd of August, was of so extensive a nature, that this lock could not be used during the remainder of the season.—The navigation of the canal was, however, maintained by making coffer-dams at the head and foot of the lock; vessels could then approach near each other above and below the retaining dam, and tranship their cargoes. This additional labor caused a material increase in the price of firewood at the city of Kingston. The remainder of the canal was kept open without interruption the whole season.

TRADE.

The tolls that would have been received had they been collected, amount to \$9,559 39, against \$11,212 18 of last season, showing a decrease of \$1,652 79. This may be accounted for, as lumber manufacturers have not been able to send their productions to market on account of the disturbance of trade caused by the war in the United States. These stocks are now on hand amounting to several millions.

The falling of ice altogether in saw-logs and sawed lumber. The local business is a little increased, as the towns and villages on the line of canal are growing. Several new manufacturing establishments have been erected, which will contribute to the business, and continue to increase as the water-powers being leased are made use of. The trade in square timber was formerly a very important item of traffic on this canal, but it lately has been of small account. A statement of the trade is appended.

REPAIRS.

Several repairs that were provided for last season had to be postponed, and the works patched up, on account of high water in the canal. The most important of the lock-gates at Edmonds, Hog-back, and Hartwell; they are now under contract.

The quantity of snow on the ground last winter warned us to prepare for an extraordinary freshet in the spring; amongst other precautions, a dam was placed across the navigable channel above Long Island dam "White Horse," to drive the surplus water down the back channel, where it could do no damage. The result proved the necessity of this, as otherwise the water would have raised over the point of Long Island, and caused another break. Some casualties occurred; the principal one was the break through the back set of Lumber's rapids. This was repaired without stopping the navigation, at a cost of \$500. A quantity of saw-logs belonging to Messrs. Blodget & Co., at Nicholson's broke loose and blocked up the sluice at Cluws. A number of logs stuck on the stone dam, breaking or displacing several large stones. These must be repaired before spring. About 700 saw-logs belonging to Foster and Graham also broke away above Smith's Lock, and blocked up the sluice and formed a jam on our new dam at this place, and raised the water over the bank. These works were in great danger for some days, but they stood the test; they were not, however, calculated for this usage. Such a freshet has not occurred for 15 years, when several important works were carried away.

PERMANENT WORKS

The most important work done during the past season has been the raising a new floor, and rebuilding the east wall of the lock at Lower Brewers. This lock was, as mentioned before, on the 3rd of August; the failure was caused by the water getting through the floor, and undermining the wall, making a large cavity, which caused the wall to settle down. The foundation is a bad one, being composed of clay and quick sand resting on granite rock which is very unequal; in some places it cannot be found, and in others it is from 6 to 12 feet below the floor of the lock, but in the centre of the lower recess it approaches to within two or three feet. The floor was composed of 4 inch boards, laid very badly jointed, laid upon hemlock sleepers, then again upon long horizontal timbers, running the length of the lock. Upon this platform the floor of the wall rested, the back part resting upon earth. The water went through the floor, and, passing through the boards, got under the wall and broke out below. There was nothing under the floor to a depth of from 2 to 4 feet, but the logs, blocks, chips, and bark. This has all been examined out, and well filled with puddle, and three rows of sheet piles driven across the lock, cutting through the timbers, and in most instances down to the rock; when driven down they were driven to at least 10 feet; these sheet piles extended in some places to the lock, and when taken down, and a row was also driven longitudinally along the lower recess, and the old wall. The wall on the other side of the lock was long to the rock, and was also examined out. Three rows of sheet piles were also driven across the lock, lower down, and the lower recess, and the chamber and sill repaired as well as possible. The floor was renewed with two thicknesses of long plank; the lower course 3 in., the lower course 2 in. thick, and well spiked.

About an average of 5 feet in depth of concrete was placed under the wall that was rebuilt. There were no headers in the old wall, and the backing was of bad quality, so that we had to procure 49 new dimension stone for headers; many of them over 5 feet long to the point, and 197 cubic yards of backing of large and well-burnt stone, so as to make a good job of it.

The masonry was completed on the 9th of November, but it was necessary to subject the lock to the pressure of the water until the masonry had been in time to harden. In deciding upon the repairs of this lock, it was decided that it should be rebuilt altogether upon a better foundation, as had been recommended by the late or former, but upon consultation with the Chief Engineer, the delay and expense were considered of great value. The cost of this, after allowing for what has been expended on the other side, that we require elsewhere, will be about \$7,000.

A statement of the repairs required for 1892 is appended. It is a statement of an important nature. Some paint and repairs to the fences and buildings at the lock. The works look smarter, but I have not provided for anything but what is absolutely necessary.

A statement of the cost of management is appended, by which it will be seen that the cost of the office establishment amounts to \$4,378; lock masters and their families \$11,927; general repairs \$2,822, and larger permanent repairs \$9,869; amounting to \$28,996. This includes the extensive repairs at Brewer's Mills.

There are 23 lock stations. The general pay of a lock-master at a lock is \$1,750 per day. There is generally a comfortable house, a garden, and a few acres of land, which renders the station more private, and enables us to get a good class of men at the low rate, so that it would not be good economy to sell the land, that is, to leave the lock premises, but to leave a reasonable allowance of ground for the use of the lock-master and his family.

I have the honor to be, Sir,
Your obedient servant,

T. TRUDMAN, Esquire,
Secy. Public Works Dept.

(Signed)

JAMES D. SLATER,
Supt. River Canal

APPENDIX E.

REPORT OF THE SUPERINTENDENT OF THE OTTAWA RIVER WORKS, WITH STATEMENT OF DETAILED DIMENSIONS OF WORKS.

OTTAWA WORKS, SUPT.'s Office,
Ottawa, 31st December, 1861.

SIR,— I have the honor to acknowledge the receipt of your communication of the 13th instant, requesting me to prepare and transmit to the department my annual report on the state of the works under my charge for 1861.

On the 21st day of August last, I prepared and sent to your address an approximate estimate of the cost of necessary repairs of the works on the Ottawa river and its tributaries, to which I would respectfully call your attention.

As I was promptly instructed by the Honorable the Commissioner to have the repairs executed in accordance with my report, I take this opportunity of stating, for his information, that the work is now well advanced, and the most difficult portions of it completed; and further, that at the

JOACHIM STATION.

extensive repairs will not be required. The work will be commenced when the ice is of sufficient thickness, and will be finished in due time. At the

CALUMET STATION.

Mr. D. Carmichael, the contractor, has re-built the lower slide in a substantial manner and has made such progress with the general repairs as would warrant me in stating that the whole improvements will be available for the business of the ensuing spring.

MOUNTAIN STATION.

The work connected with the repairs is under contract, and will be properly done by Mr. J. O'Connor, contractor.

PORTAGE DU FORT STATION.

The improvements there are in a fair state of repair. A portion of the stiff boom will be removed when the formation of the ice renders it practicable.

HEAD OF CHATS RAPIDS.

Two new piers are to be built there as soon as they can be located on the ice. Piers at the head of these rapids constitute a valuable improvement, as all rafts are moored previous to their being taken over in small bands.

CHATS STATION.

The works there were thoroughly repaired last winter, and only require two new aprons. At this slide the aprons are exposed to such tear and wear, that they have to be renewed every season.

Two of the mooring piers were slightly damaged when the ice shoved from Duchene lake last spring; they will be repaired as soon as possible. The booms are in good order.

LITTLE CHAUDIERE STATION.

The work commenced with the gravel pier referred to in my report, is under contract. The slide is comparatively new, and no repairs will be necessary.

HULL STATION.

The old slide has been removed, and the contractor (Mr. Vosburgh) has nearly completed the new one. The weather has been very favorable for laying the foundations, and improvements cannot fail to be of the best description.

OTTAWA STATION (SOUTH CHAUDIERE.)

The repairs of the four slides are well advanced. The upper timbers, which were decayed, have been removed, and new courses laid as proposed. The foundations of the slides are good.

THE UNION SUSPENSION BRIDGE

It was thoroughly repaired last summer. The roadway timbers were removed, and rolled timbers, imported from England, substituted. The oak chords and side-walks were removed, and the bridge painted.

The anchor bars and the vaults were completely cleaned, and coated with anti-corrosive paint. The strength and durability of the structure are now beyond doubt; the only repairs required for years to come will be the renewal of the roadway planking at a trifling expense.

PETEWAWA RIVER.

The repairs of the works on that stream are being made by Mr. John O'Connor. They are progressing very satisfactorily, and will be done according to contract in time for the spring "drives."

MADAWASKA RIVER.

Mr. Moses Aubrey, the contractor, is repairing the works on that reach of the river from Chain rapids to Calabogie lake. They consist of a boom at Chain rapids, dams at Aubrey's and Ragged Chutes, main guide boom at the head of High Falls slide, the long slide at High Falls, dam at Little Island, boom at foot of High Falls slide, dam at Barrett's dam, Skend's dam, and the long retaining boom at Calabogie lake. The most difficult portions of the work are completed, and the contractor is waiting for the formation of ice to enable him to sink certain piers. The whole will be completed and ready for the business of the coming spring.

FLAT RAPIDS STATION. (MADAWASKA.)

The dams there are to be repaired. The water is very high for this season of the year, but the work can be done about the month of February.

ARNPRIOR STATION. (MADAWASKA.)

The slide, guide booms, and long retaining boom at the mouth of the river are in good order, and but little in the shape of repairs will be required.

GATINEAU RIVER.

The boom and piers near the mouth of the river, which were extensively repaired last winter, withstood the extraordinary spring floods, and although a greater number of logs passed through the boom than in any previous season, the works were not perceptibly damaged.

An appropriation is required for the following works, viz:—*The line of wooden*

bridges at the *Chaudière Falls*, which forms a portion of the main thoroughfare leading to the upper Ottawa country. There is great traffic on these bridges; the more especially since a portion of the stones for the Parliament Buildings was drawn from the lower Province.

The roadway planking will have to be renewed; the lower course will be 500 ft. by 18 ft., by 4 inches thick, equal to 36000 ft. B. M., at \$9 per 1000

\$ 324 00

Upper course will be 500 ft. by 12 ft., by 3 in — 18000 ft. B. M., at \$9.

162 00

Spikes

10 00

\$ 324 00

I would further recommend that 330 cubic yards of road metal be laid on the northern approach to the "Union Bridge." It is 950 feet in length, and is much cut up. The cost at \$1.00 per yard will be \$330.

THE CARILLON PIER DAM

Requires an addition at the lower end. Last season the deal cribs, which drew 30 inches of water, were damaged in the "cellar" at the foot of the works. The side piers should be made 40 feet longer, which will have the effect of carrying the cribs into deeper water. This improvement will cost about \$1200, and is of the greatest consequence to the safe running of cribs of a heavy draught. I would recommend that the work be done next season of low water.

The following tabular statements show the importance of the lumber trade, and of the public works for facilitating the descent of timber, on the Ottawa river and its tributaries:

I

Saw logs passed through the Madawaska works during the season of 1861.

about..... \$2,000

II.

Saw logs passed the Gatineau works from 1851 to 1861, both inclusive: —

Years.	Number of Saw Logs
1854.....	178,720
1855.....	128,114
1856.....	126,008
1857.....	156,812
1858.....	168,712
1859.....	228,727
1860.....	248,406
1861.....	322,180

III.

Square timber passed through the Chaudière slide, city of Ottawa, from 1854 to 1861:—

Years.	Cribs.	Pieces of Timber.
1854.....	13,035.....	294,457
1855.....	11,145.....	220,571
1856.....	12,826.....	255,278
1857.....	13,924.....	273,605
1858.....	10,524.....	197,736
1859.....	11,404.....	235,266
1860.....	12,277.....	254,788
1861.....	13,469.....	322,180

In submitting the above,

I have the honor to be, Sir,

Your most obdt. Servant,

(Signed) HORACE MERRILL,

Supt. of Ottawa Works.

T. TRUDEAU, Esquire,
Secy. Public Works,
Quebec. }

MEASUREMENTS OF WORKS BELONGING TO THE GOVERNMENT ON THE OTTAWA RIVER AND ITS TRIBUTARIES.

OTTAWA RIVER.

JOACHIM STATION.—UPPER SLIDE.							Feet.
North dam	.	.	.	.	.	.	140
Width of slide	.	.	.	.	.	.	26
Length of do.	.	.	.	.	.	.	37
South dam	.	.	.	.	.	.	107
Boom between slides, supported by 4 piers	.	.	.	.	.	.	990
Lower slide, width	.	.	.	.	.	.	26
“ “ length	.	.	.	.	.	.	297
North side dam	.	.	.	.	.	.	157
South do. do.	.	.	.	.	.	.	206
Guard pier at lower end of slide, north side	.	.	.	.	.	.	182
do do south do.	.	.	.	.	.	.	41

CALUMET STATION.

Stiff 6 ply boom at entrance of slide, supported by one pier and heavy anchor	.	.	.	.	.	.	360
Canal excavated through solid rock	.	.	.	.	.	.	300
Entrance bulkhead centre of canal (span)	.	.	.	.	.	.	26
Large basin and by wash.	.	.	.	.	.	.
Stiff guide boom in basin leading to head of long slide	.	.	.	.	.	.	221
Length of long slide	.	.	.	.	.	.	530
do. of guard pier from foot of long slide to head of lower slide	.	.	.	.	.	.	250
Stiff guide boom	.	.	.	.	.	.	80
Lower slide 26 feet wide	.	.	.	.	.	.	126
Guard pier on the south side from foot of slide	.	.	.	.	.	.	420
do north do do	.	.	.	.	.	.	120

MOUNTAIN STATION.

Guide boom on north side of head of slide	.	.	.	.	.	.	297
Upper bulkhead, (span)	.	.	.	.	.	.	26
Length of slide	.	.	.	.	.	.	572

PORTAGE DU FORT STATION.

Stiff guide boom at entrance of slide supported by four piers	.	.	.	.	.	.	710
Length of slide	.	.	.	.	.	.	850

CHENEAUX BOOM,

Supported by anchor piers, &c

CHATS STATION.

Length of guard pier on island at entrance
 Dam across timber channel, head of Victoria Island
 Entrance bulkhead upper end of long canal span
 Length of canal to slide
 do of slide

BEMOUS BOOM,

Supported by 5 piers

LITTLE CHAUDIERE STATION.

Long guard pier above island
 Boom hanging from do, supported by two piers
 Pier dam below island
 Crib slide, 26 ft. wide
 Span of bulkhead over slide

HULL STATION.

Guide boom for slide, supported by 6 piers
 Guard pier at entrance of slide
 Wing dam from guard pier, extending towards falls
 Span of bulkhead over slide
 Stone pier dam, laid in cement, from bulkhead to lower side of bridge,
 forming side of canal to bridge and slide
 6 ply boom from stone dam to head of slide
 Wing dam at head of slide
 Length of 1st slide, 26 feet wide
 do 2nd do
 do wing dam at head of 2nd slide
 Stone dam from island to main shore

SOUTH CHAUDIERE STATION. CITY OF OTTAWA.

Length of guide booms for square timber, supported by 6 piers
 Do retaining boom for saw logs, supported by 7 piers
 Do 1st slide
 Do 2nd do
 Do 3rd do
 Do 4th do
 Main hydraulic dam from head of Chaudiere Island to Russell Island
 Continuation of do. from Russell Island to Mary Island
 Do from Mary Island to Amanda Island
 Entrance bulkhead and pier dam for slide
 Stiff boom entrance to 1st slide
 Length of stiff booms from foot of 1st to head of 2nd slide

Wooden bridge across head of 2nd slide; length	82
Length of stiff booms between 2nd and 3rd slides	429
Do do 3rd " 4th do	825
Do of dam at head of 4th slide	214
Dam from " Coffin" to Albert Island	66
Stone pier dam from Coffin Island to head of Victoria Island	348
Bulkhead from Albert Island to Chaudiere Island, (for water lots)	82
Do and storehouse from head of Chaudiere Island to main dam	115
Hydraulic dam from Chaudiere to Victoria Island	330
Length of wooden bridge from mainland to Chaudiere Island	415
Do of side bridge from main bridge to Victoria Island	33
Do of do from do do to Albert Island	66
Pooley's bridge, City of Ottawa, (wooden)	148
Toll house on " Union" bridge, " Reserve."	
Union suspension bridge, length between towers	246
Stone bridge from end of suspension bridge, leading to Hull, (two large anchors, &c.)	561
Carillon dams, length.	3300

II. TRIBUTARIES OF THE OTTAWA.

PETEWAWA RIVER.

Crooked Chute Station.

North Branch.	Flat dam	100
	Single stick slide	250
	Guide boom at head of slide	400
	Half mile rapid.	
	Flat dam	160
South Branch.	Upper slide, (single stick)	513
	Second do (" ")	372
	Third dam	82
	Fourth do	60
	Slide (" ")	75
	Fifth dam	100
	Slide, (" ")	215
	Sixth dam	78
	Slide (" ")	271
	Slide (" ")	432
	Eighth dam	150
	Slide	174

Bois Dure Station.

Main Stream.	Flat dam	116
	1 Pier	250
	Single stick slide	250
	Guide boom	950
	3rd Chute. Guide boom north side of head of slide	243
	Do do south do do	586
	Dam north side of slide	97
	Do south do do	101

Main Stream.	2nd Chute	Length of slide, single stick	-	.	1846
		Guide boom north side of head of slide	.	.	882
		do do south do do	.	.	1169
	1st Chute.	Dam on north side of slide	.	.	489
		Do on south do do	.	.	287
		Length of single stick slide	.	.	554
		Guide boom north side of head of slide	.	.	248
		Do do south do	.	.	541
		Dam on north side of slide	.	.	118
		Do on south do	.	.	859
	Retaining boom at mouth of river, supported by 6 piers	Length of single stick slide	.	.	563
			.	.	4000

MADAWASKA RIVER.

Chain Rapids boom, supported by 2 piers and three islands	.	.	8960
Single stick slide, 6 ft. wide at lower end of boom	.	.	850
Dam at Bailey's chute; length (north side)	.	.	250
Do do (south side)	.	.	150
Two dams immediately below Bailey's chute	.	.	200
Dam at Ducks' Islands	.	.	125
Do at Boniface rapids	.	.	60

RAGGED CHUTE STATION.

Length of dams south side at head of falls	.	.	550
Do of pier adjoining do	.	.	150
Do of dam adjoining pier	.	.	100
Do of dam on north side at head of falls	.	.	150
Eddy pier at foot of falls	.	.	300

HIGH FALLS STATION.

Length of main guide boom, 10 ply at head of slide, supported by 5 piers	.	.	692
Dam across head of High Falls	.	.	300
Length of single stick slide, (falls 60 ft.)	.	.	1200
Boom supported by one pier at foot of slide	.	.	800
Length of two dams immediately below foot of long slide	.	.	300
Do of 4 dams about one-fourth mile further down stream, at and near Barrett's chute	.	.	550

CALABOGIE LAKE.

Length of boom supported by 2 piers	-	-	3040
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BURNISTOWN RAPIDS.

Boom supported by 3 piers; length	-	-	700
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FLAT RAPIDS.

Dam on south side ; length	500
Do. on south do	800

ABENPRIOR.

Safety boom above bridge	400
Wooden bridge over river	266
Guide boom at head of slide	150
Dam across river	250
Crib slide, 26 ft. wide	180
Guard pier on west side, immediately below slide	180
Retaining boom at mouth of river, supported by 8 piers	5200

GATINEAU RIVER.

Boom supported by 7 piers, (a portion, say 1800 ft., is 6 ply)	2000
Length of bridge head of canal	52
Do of canal from Gatineau river to Pond	2191
Do of division boom in Gatineau Pond	1953
Do of boom at mouth of creek	185
Anchor and floating stage at rafting ground near the junction of the creek and the Ottawa River	

RECAPITULATION.

Total Lengths of	Feet.	Miles.
Piers	4228	800
Dams	14066	2664
Booms	60674	11491
Crib slides	4014	760
Single stick do.	6565	1243
Canals	4191	792
Bridges	1338	253

(Signed)

HORACE MERRILL,
Supt. of Ottawa Works.

OTTAWA, 22nd February, 1862.

APPENDIX F.

ANNUAL REPORT OF THE SUPERINTENDENT OF THE SAINT MAURICE WORKS.

SUPT.'S OFFICE, ST. MAURICE WORKS,
Three Rivers, December 21st, 1861.

SIR,—I have the honor to acknowledge the receipt of your letter of the 13th instant, requesting me to forward my annual report on the state of the works under my charge.

The extraordinary freshet last spring, which caused considerable damage to the works, demonstrated the necessity of raising many of the piers, strengthening some of the booms, and making sundry other less important ameliorations.

This work, having received the approval of the department, was given out by contract to certain parties, and is now progressing in a satisfactory manner, as will more fully appear under the heading of the several stations.

STATION "MOUTH OF THE RIVER."

The improvements at this station are nearly finished. As soon as the ice is sufficiently strong to enable the contractor to draw a few stones, they will be completed.

Inasmuch as the works here cannot be operated without trespassing upon private property, it appears to me highly necessary that the required quantity of land adjacent to the booms should be acquired by the department, as recommended in my letter of the 18th of November last, and former letters.

Upon this land, when purchased, there should be erected a small store-house (*hangar*) which would cost about £50. The storehouse now in use is very inconveniently situated a long distance from the work, and the roof (which is covered only with boards) leaks to such an extent as to injure the ropes and other articles of plant that may be in store.

The boat now in use at this station is so much decayed that a new one (or a scow, which will be less expensive) will be required for next spring. A scow 40 feet long, 8 feet wide, with windlass, oars, &c., complete, may be made for \$50.

In addition to the foregoing, the 8 mooring posts, estimated at £20 in my letter of the 18th ultimo, are a matter of indispensable importance. The department is already aware that the reason why these 8 posts were not included in the contracts for repairs now going on, is, that Caron's Island, where they must be placed, has not yet been acquired by the government.

STATION "GRES FALLS."

The works here are in good order, and no repairs are required.

STATION "SHAWENEGAN."

The repairs here are progressing favorably, and will probably be completed next month. Such arrangements have been made and precautions taken, this fall, as, it is hoped, will ensure the early and effectual extension of the booms next spring.

All the buildings at this station are so much decayed, that they are almost untenable.

stores are in such a state that the plant is suffering materially from the leakage of the kinks. Five years ago, I believe, an appropriation of £200 was made for new buildings here, and the necessity for them has been several times since represented, but nothing has as yet been done. I would strongly recommend an appropriation of £300 for coming year, which would construct one dwelling house and one storehouse. Two small boats are required here; value \$25 each.

STATION "GRANDE MÈRE."

The material for works at this station is prepared, and the repairs will be commenced as the ice is sufficiently strong. This station is now being operated at much less cost than heretofore.

STATION "LITTLE PILES."

The repairs here are well advanced, and will be completed in January.

STATION "LA TUQUE."

The booms here have been repaired, and the material for the remainder of the work is prepared. As soon as travelling upon the ice is safe, the work will be pushed forward.

In making my approximate estimate for anchor piers, &c., here, I calculated upon having a sufficient quantity of chains at Shawenegan and at the Grande Mère to answer the purpose. As circumstances known to the department prevented the raising of these chains, a quantity will have to be provided. The exact quantity required will be furnished to the department in a few days.

In conclusion I would remark, that with the exception of the difficulties arising from extreme high water last spring, the St. Maurice works have been operated the past year with perfect success. Every economy compatible with the efficient working of the establishment has been exercised.

The cost of maintenance last year was \$6,868.53; this year \$6,603.5, or about 4 per cent. less, notwithstanding the difficulties alluded to, and while the quantity of lumber that passed through the works was much greater than any former year.

I have the honor to be, Sir,

Your most obedient servant,

(Signed)

HENRY R. SYMMES,

Superintendent.

DECAT, Esq.,
Sec'y Department Public Works,
Quebec. }

APPENDIX G.

REPORT OF THE HON. H. H. KILLALY, ON HARBORS OF REFUGE

Toronto, 14th February, 1862.

SIR,—I have the honor now to acquaint you, for the information of the Honorable the Commissioner of Public Works, with the progress I have made in carrying out his instructions in reference to an examination of the west coast of lake Huron, from Sarnia to Cape Hurd, and of the north shore of lake Erie, with the view of ascertaining what places thereon offer facilities for the forming of a safe and accessible harbor of refuge.

It was at first considered probable that I would be assisted in the examination by making use of the steamer "Whitby," then chartered for the delivery of the light-house supplies. This vessel, however, had passed up on her trip before I had received the necessary instructions; but even was it otherwise, the nature of her charter would not have admitted of my taking her out of her course to, and detaining her at places where there were no light-house supplies or repairs to be furnished or made.

Within a short time after my attention was directed to this service, I received notice of His Excellency the Governor General having been pleased to appoint me a commissioner to act with Captain Collinson, of the Royal Navy, and Colonel Whittingham, of the Royal Engineers, (named respectively by the Lords of the Admiralty and the Secretary of War) to examine into the state and character of the naval reserves of the Province.

Having performed this duty, we made our report thereon to the Secretary of State, as the proper quarter to address it; but subsequently I was called upon to make a separate report for the information of the Provincial Government; and as reference is made in it to the subject of harbors, a copy of the report is appended hereto, letter A (not printed.)

Being fully aware of the great pressure and influence exerted to have works undertaken at various places, where it was represented that "nature afforded great facilities for the construction of harbors of refuge," but at most of which, in reality, the locality and nature of the coast forbid the obtaining of any harbor deserving such a name, unless at an enormous outlay, I considered it most fortunate that I should have the advantage of consulting upon the subject with a naval officer of such experience and hydrographical reputation as Captain Collinson.

I learn from him that (from facts which had come under his notice in the course of the commission) on his return to England he would recommend that a naval officer should be sent in the spring to correct a few inaccuracies originated by the inferiority of the instruments formerly employed, compared with those now in use; and, fully persuaded that the rival and conflicting claims of the several localities for selection as "harbors of refuge," cannot be decided on so *finally* or satisfactorily by myself or any other Provincial servant, however upright or qualified, as by an officer of the navy, to whom no shadow of bias or party could be attributed, I take the liberty to urge strongly the importance and expediency of the opinion of such an officer being had upon the subject.

From a letter I have received from Captain Collinson, I have every reason to believe it highly probable that an officer will be sent to lake Huron shortly, and, while there, the Province can have the benefit of his services, as suggested, in a short time and at little expense; and, by it, an end would at length be put to the project of constructing "harbors of refuge" at places wholly unsuitable.

The prudence of this course is the more obvious when our present relations with the States, and the great extent of their projected works upon their lake coasts and harbors are considered; as, of course, it is all important that any such outlay in this Province should be made so as to subserve both to defence and commercial operations.

Under this impression, I limited my attention to a few of those I considered the most important places named in the documents accompanying your instructions to me, or those in favor of which the applications were most pressing.

For expenditure of the nature referred to, urgent applications have been made in favor of the following places on lake Huron, viz.:

Saugeen or Southampton, Baie-du-dard, Inverhuron, Kincardine, Port Albert, Goderich, Bayfield, &c.; and on lake Erie, viz.:

The two creeks, the Rondeau, the 16 mile creek, Port Burwell, &c.

At several of these places a small expenditure has been incurred, chiefly for the construction of landing piers, for the convenience of shipping the produce of their respective localities.

At Southampton, off the mouth of the River Saugeen, Chantry Island serves as a natural break-water; and if the work at the north end of it was extended sufficiently, and another mole erected at the south end, a very valuable asylum would be had there for vessels, in bad weather.

The Port of Goderich has become of considerable importance from the size of the town, the only one on the main coast of Lake Huron, it being the outlet of a very fine and highly productive back country, into which some of the best roads in the Province now lead; but particularly from its being the terminus of the Buffalo and lake Huron Railway, a line which traverses the centre of that important section of the Province,—and crossing and connecting with all the important railways, it affords direct and facile communication with any part of the Province.

The railway company are now, I believe, the proprietors of the harbor, towards the extension and improvement of which they have expended a large amount of money.

Without desiring in any manner to prejudge the question as to the selection of the most eligible sites for one or more bona fide "harbours of refuge" on this coast, the necessity for which is admitted on all hands, I feel bound to represent the importance, in a defensive as well as a commercial point of view, of having this harbor completed.

Attached hereto (Appendix B, not printed) is a copy of the instructions I gave Mr. Wise for his guidance in making a survey of this harbor.

Also Appendix C, Mr. Wise's report thereon (not printed).

The map No 1, taken from one made by Mr. Burwell in 1827, shews the state of the river prior to any works being commenced.

No. 2, shews the nature and extent of the work done up to 1842, and the influence it had in filling in the beach to the north of it; and the successive deepening of the channel from 1834 to 1842, effected by confining the river between the piers.

No. 3, shews the position of the town generally, with respect to the harbor and the river.

No. 4, Map of the harbor of Goderich, from a survey by Mr. Wise, shewing its present state, the extent of work done or contracted for by the harbor or railway company, and the soundings within the harbor and the piers, and in the offing;—the extension and line of the piers, which are, in my judgement, required to afford a good and facile entrance, is also shewn by a red tint.

No 5, A map prepared by the direction of the Railway Company, on which is shewn the works now done or under contract; also the extent and nature of the works proposed by their engineer, Mr. Molesworth, in the final completion of the harbor.

From the foregoing it will be seen that the principle adopted in the construction of this harbor is to convert the extensive flat at the mouth of the river, some 20 acres in extent, into an inner basin, to have a depth of 14 feet water; the entrance to it being between two piers, with which considerable progress has been made. The width between the piers at the narrowest part is 170 feet. Vessels wintering in this harbor ran considerable risk in spring, from the ice carried down on the breaking up of the winter, by which a steamer was, in 1859, carried out and lost. To obviate this, the company have had an ice breaker, of considerable extent, constructed across one of the branches of the river, which effectually answers its purpose.

Reference to map No. 5 will shew that it is proposed by the company hereafter, to divert the river altogether from the harbor, and pass it into the lake, by a channel close under the high land on the north of it. Many good reasons can be given in support of the scheme, but, no doubt, it is not intended to proceed hastily with it.

The first great object is to have the piers extended, I should say, into 20 feet water; experience proving, in such cases on these lakes, that the shingle ceases to be carried round the extremities of the piers in such a depth. The north pier would, on this principle, require to be run out about 700 feet further, and should be terminated by a crib 50 or 60 feet square, having a light-house upon it, and another range light about half way to the shore.

The extension of the southern pier should be about 600 feet. I would recommend it to be laid in such a direction as to give an entrance of 300 feet in width; the head of it, and of that of the north pier, to bear about N.W. by West, so that the run of the waves in heavy blows, which are from the N.W., should not lead within the piers. With such an entrance, and the main basin dredged out to 14 feet, there can be no doubt but that it would be a most valuable harbor.

As far as I could procure information, the river does not bring down much silt or deposit. From several test pits I had sunk, it is satisfactorily ascertained that there is no rock to be found in the entrance or basin, within 20 feet of the water surface; but from a little distance above the basin, the bed of the river assumes a rocky character, so that it is reasonable to expect that the basin being once dredged out, the depth will be maintained.

I am of opinion that if the government retain any control over the harbor, the company should be restricted from forming the large wharf and laying down tracks on it, in the centre of the basin, as shewn in their plan (No 5); as such would materially curtail the extent to which it would be necessary hereafter to extend it for general purposes, and would confine it, in a great measure, to those of the railway only.

The map (No 4) will be found a very satisfactory document in every respect.

Several of the other places on this lake, recommended as eligible sites to be selected for the construction of harbors of refuge, I am acquainted with; and I do not hesitate to say that it is impossible to convert them into such; and all that can reasonably be done at them is the construction of landing piers for local purposes, the building of which should be left to the localities.

As I have already stated, I am satisfied that if the government can induce the admiralty, so to instruct their officer when upon duty on lake Huron, shortly, to report at what place or places on the coast between Sarnia and cape Hurd, the construction of a harbor of refuge can properly be undertaken, the question will be more satisfactorily decided than by any other course, and a great deal of trouble and expense saved. It would be still better if Lake Erie was embraced in his instructions; and the indispensable points to be looked for in selecting a site for a "harbor of refuge" are so obvious, a very short time would enable such an officer to report decidedly upon the subject.

As directed by the Honorable the Commissioner of Crown Lands, in the absence of the Honorable the Commissioner of Public Works, I have had a survey made of the "*Two creeks*" on lake Erie, a place repeatedly and strongly urged upon the attention of government as eligible to be converted into a "harbor of refuge."

The character of the creeks will be fully understood by referring to the map (No. 6), and Mr. Wise's report (appendix D), both accompanying (not printed).

From these documents it will be seen that this place, so strongly recommended for a "harbor of refuge," consists of two circuitous ravines, washed through a clay country from the water shed to the lake by the spring freshets; upon the ceasing of which, there is no further discharge of water, and the entrance into the lake, which the flood had opened, is quickly and wholly filled up by the shingle of the lake.

The channel which remains in the creeks has a depth of water varying from 3 to 8 feet, in many places not over 20 feet wide; the bottom is of soft mud, through which a pole can easily be pushed by the hand 6 feet, and the breadth of the creeks not occupied by water, is filled in by a mass of semi-fluid vegetable matter, easily moved about from place to place; the stench from which, in summer, is so intolerable, that Mr. Wise found it difficult to keep his men there. The banks are generally about six feet over the water.

There is nothing in the nature or direction of the coast, no more than in the creeks, present any inducement for public expenditure at this place.

To enable me to report upon the state of the Rondeau harbor, I found it necessary to cause a minute survey made of the entrance, and of the lines of coast, shoals, &c., around Mr Wise's map, No 7, and report (appendix E), are herewith accompanying (not dated).

This harbor, or basin, is situated about midway between Port Stanley and Pelée Island, each of which it is distant about 50 miles. It is a sheet of water about $6\frac{1}{2}$ miles long, an average breadth of two miles. It is enclosed, from lake Erie, by a low sand bank much the same character as that which forms Toronto harbor; and was caused, no doubt by the long reach of sea in south-east winds, which carries along with it the debris from the high banks on the north side of lake Erie, into which the waters of this harbor, from time to time, made serious encroachment.

The bank enclosing the Rondeau had, until a short time back, been well covered with shingle, and it is much to be regretted that effectual steps to prevent its destruction have not been taken, as it afforded the principal shelter to vessels taking asylum in the harbor.

No streams of any magnitude discharge into this basin, but its waters are much warmed by those of lake Erie—as the latter may be affected by storms, the former rise with it. The connection between which is on the west side of the bar, where the bank is narrowest and weakest. Through this bank, the waters, from time to time, cut channels, according to the direction of the wind; one of the channels usually closing when another is opened. On my examination I found the water throughout the Rondeau generally to be covered with a soft mud bottom. The piers that had been built to fix and keep open a passage from the basin to the lake, accomplished that object fully; as between them, even in their present dilapidated state, there is not less than 18 feet of water.

To the west of this entrance the waters have cut a very large breach across the beach, most of which there is now a depth of from 6 to 8 feet of water.

The superstructure of the piers is rotten, and what remains of them hangs over considerably into the channel, into which it will probably soon fall.

There being but little population around this harbor, and no village deserving the name, and but one saw mill, the trade of it is a mere trifle.

When the piers, light-house, and entrance were in good order, the principal value of it was as a place to which vessels caught by severe weather on that part of lake Erie could run for shelter, and many vessels have thereby been saved.

Shortly after the light-house, which stood on the end of the east pier, was burned down, two vessels were wrecked immediately close to the entrance.

The effectual repairs of this harbor would now be attended with considerable expense, such as 14 or 1500 feet lineal of pier would be required, and not less than 3000 feet in length of a break-water, whether of cribs or piles and brush, to collect and retain the sand and shingle. Even with this embankment, a great length of sand spit would still be left, through which the water would probably force its way, when the breaches were closed and mended. I am of opinion that an expenditure not much under £25,000 would be required to repair the cost of the piers, break-waters, light-house and dredging, &c., which would be necessary for the establishment and protection of this harbor.

WELLER'S BAY

To carry out the instructions of the Honorable the Commissioner of Public Works in reference to this harbour, it became necessary to have an accurate survey made of the entrance to it, in order to ascertain the extent of the shoals, banks, depth of water in, and direction of the channel leading into it, so that by comparing their present state with that shown by former surveys, a safe opinion might be arrived at, as to whether there was much tendency in the channel and bars to shifting or altering their position and depth.

The results of the survey are very satisfactory, as they shew that the state of the harbor in all essential particulars, is in no way less favorable than at the period of the former survey. In fact the only perceptible difference is that there is rather a better state of water in the channel now than formerly.

The sheet of water named Weller's Bay, is divided by a spit of sand and islands into an inner and outer bay. The former averaging about $1\frac{1}{2}$ miles wide by about $2\frac{1}{2}$ miles deep, at the bottom of which is situated the village of Consecon; the outer bay, from which is the entrance leading to lake Ontario, is about two miles deep and one mile wide. For two thirds of the area, the water is from 15 to 20 feet in depth, with a good clay bottom.

The breadth of Weller's Bay from land to land at the entrance is about 4,800 feet, in the centre of which is the channel to the bay, 450 feet wide in the narrowest part, and about 1300 feet in length. Through this channel there is a depth of water sufficient for any vessel navigating the lake.

A sand bank extends from this channel, on each side, across the mouth of the bay—On this bank, immediately at the sides of the channel, the water is from 7 feet to 8 feet 6 inches in depth, which diminishes gradually as it approaches the shore, near which it is about two feet deep.

At each end of the entrance channel, both in the lake and in the harbor, the water deepens quickly to 20 and 24 feet.

In strong west and south-west winds, there is a heavy surf on this bank.

To establish the entrance channel beyond all question, it would be necessary to erect piers on each side, of about 1500 feet in length, with a light-house on one of the ends next the lake; and from the piers to the shore, on each side, a breakwater would be required—all of which would involve a very heavy expenditure, not warranted by the trade; but the bay presents so many inducements to vessels to shelter in, from the direct and deep channel leading into it, and the fine width of water and good anchorage inside, it seems to me highly desirable the channel should be buoyed out clearly, for which four buoys would be ample. Then with two range lights, erected upon cribs to be sunk for that purpose—or probably one light on a crib, the other on the main land—the entrance would be safely made at all times.

I believe the department has at its command some screw buoy moorings, which would answer very well in this position. In this case the principal outlay would be on the cribs and light-houses, neither of which need be of an expensive character. The approximate estimate for these is £750.

Accompanying is a map (No. 8) by Mr. Wise, from actual survey (not printed), which will be found a very satisfactory document, shewing as it does the positions of the two harbors, Weller's bay and Presqu'isle, the entrances to each, the soundings, banks, &c., &c.

I have the honor to be, Sir,
Your obedient servant,

(Signed)

HAMILTON H. KILLALY.

T. TRUDEAU, Esq., *Secretary* }
Department Public Works. }

APPENDIX—H.

1.—STATEMENT of the dates of opening and closing of navigation at Quebec, from 1814 to 1861, inclusive.

Year.	Opened.	Closed.	Years.	Opened.	Closed.
1814	25th April	7th December.....	1838	1st May	26th November.....
1815	26th April	5th do	1839	23rd April.....	19th December.....
1816	23rd April.....	29th November.....	1840	21st do	2nd do
1817	6th May.....	5th December.....	1841	4th May	14th do
1818	27th April.....	1st do	1842	26th April.....	2nd do
1819	30th do	7th do	1843	5th May.....	1st do
1820	24th do	1st do	1844	23rd April.....	29th November.....
1821	3rd May .....	.....	1845	23rd do	2nd December.....
1822	26th April	3rd December.....	1846	14th do	9th do
1823	25th do .....	.....	1847	11th May	3rd do
1824	20th do	11th December.....	1848	18th April.....	5th do
1825	19th do .....	.....	1849	24th do	7th do
1826	22nd do	21st December.....	1850	26th do	10th do
1827	16th do .....	.....	1851	22nd do	5th do
1828	12th do .....	.....	1852	30th do	19th do
1829	18th do .....	.....	1853	26th do	3rd do
1830	17th do	4th December.....	1854	5th May	5th do
1831	21st do	30th November.....	1855	8th do	27th November.....
1832	29th do	30th do	1856	22nd April.....	2nd December.....
1833	19th do	25th do	1857	28th do	4th do
1834	18th do	9th December.....	1858	16th do	3rd do
1835	4th May	1st do	1859	26th do	29th November.....
1836	18th do	1st do	1860	20th April.....	8th December.....
1837	2nd do	12th do	1861	26th do	17th do

HOUSE, QUEBEC,
29th January, 1862.

(Signed,)

E. B. LINDSAY,
CL. T. H., Q.

N^o. 2--STATEMENT shewing the opening and closing of navigation at the PORTS of QUEBEC, MONTREAL, and KINGSTON;
(furnished by the Collectors of Customs of the respective places.)

Year.	PORT OF QUEBEC.		PORT OF MONTREAL.		PORT OF KINGSTON.	
	ARRIVALS.		No. of days from first arrival to sailing of last vessel.	First Steamer for Quebec.	Last Steamer for Quebec.	Days of Navigation.
	From Montreal Steamer.	From sea Ship.				
1830	April 17	April 26	December 4			
1831	" 21	" 16	November 30			December 19
1832	" 29	May 4	" 30			" 4
1833	" 18	" 10	" 25			Jan. (1834) 1
1834	" 18	" 6	" 24			December 23
1835	May 4	" 2	" 26			" 31
1836	" 11	" 11	" 25			April 6
1837	" 1	April 29	" 18			" 23
1838	April 26	May 3	" 20			" 11
1839	" 21	May 8	" 23			Jan. (1838) 16
1840	" 19	April 23	" 28			December 18
1841	May 1	" 29	" 28			" 26
1842	April 21	May 3	" 28			" 23
1843	May 5	April 18	" 28			" 31
1844	April 23	May 2	" 23			Jan. (1844) 3
1845	" 25	May 1	" 36			" (1845) 12
1846	" 17	April 24	" 27			" (1846) 9
1847	May 8	May 8	" 20			April 25
1848	April 6	" 1	" 21			March 9
1849	" 25	April 28	" 25			April 2
1850	" 25	" 28	" 28			March 31
1851	" 27	" 20	" 20	April 21	November 30	April 11
1852	" 30	" 15	December 4	" 28	December 13	" 3
						" 6
						" 1
						" 26
						" 22
						Jan 14, 1853
						" 19
						" 2
						" 22
						" 26
						" 271
						Jan. (1848) 6
						December 10
						" 273
						" 286
						" 266
						" 271

1853	April 23.....	April 24	November 26.....	218	April 20.....	December 1	226	April 4.....	Jan. 5, 1854.....	277
1854	May 5.....	" 29.....	" 29.....	208	May 1.....	" 2	216	" 10.....	" 13, 1855.....	279
1855	" 6.....	May 6.....	" 22.....	200	" 5.....	November 23.....	201	" 17.....	" 1, 1856.....	280
1856	April 27.....	April 28.....	" 23.....	211	April 29.....	" 25.....	211	" 8.....	December 31	268
1857	" 17.....	" 20.....	" 24.....	222	" 29.....	December 5.....	215	" 2.....	Feb. 2, 1858.....	307
1858	" 18.....	" 28.....	" 25.....	222	" 16.....	November 30.....	229	" 26.....	Jan. 8, 1859.....	258
1859	" 22.....	" 29.....	" 28.....	221	" 12.....	" 26	229	" 15.....	December 25	255
1860	" 26.....	" 28.....	" 26.....	215	" 16.....	December 2.....	231	" 12.....	Jan. 10, 1861.....	274
1861	" 26.....	" 22.....	December 2.....	221	" 26.....	" 2	221	" 8.....	" 4, 1862.....	272

No. 3.—STATEMENT shewing the opening and closing of the Welland, Burlington Bay, Williamsburg, Cornwall, Beauharnois, and Lachine Canals, St. Anne's Lock, Ottawa river, St. Ours' Lock, and Chambly Canal.

YEAR.	WELLAND CANAL.			BURLINGTON BAY CANAL.			WILLIAMSBURG CANALS.			CORNWALL CANAL.			BEAUHARNOIS CANAL.		
	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.
1831	April 8th...														
1832	May 15....														
1833	May 20....														
1834	April 10...	November 15...	220												
1835	May 1....														
1836	April 26...														
1837	May 5....														
1838	April 9....														
1839															
1840	April 2....	December 1....	244												
1841	May 4....	do 6													
1842															
1843		December 4....		April 24...	do 29	241				April 10	November 28	243			
1844	April 1....	do 4....	248	do 6	do 27...	268				do 24	December 2...	225			
1845	May 7....	November 29...	267	March 27...	do 23...	272				do 20	November 2	216			
1846	April 3....	December 15...	257	April 7....	do 27...	256				do 28	December	2			
1847	April 14...	do 9....	240	do 10....	do 25...	260				May 1....	do 4	215			
1848	April 10...	do 19....	254	February 28...	do 23...	302				April 7....	do 9	247			
1849	April 3....	do 7....	243	March 28...	do 26...	274				do 7	do 6	244			
1850	April 1....	do 12....	265	March 22...	do 10...	262				do 20	do 7	232			
1851	March 23...	do 12....	261	March 22...	do 24...	278				do 25	do 12	232			
1852	April 13...	do 14....	246	April 22...	do 31...	254				do 16	do 16	290			
1853	April 1....	do 17....	261	do 5....	do 30...	270				May 1....	do 14	230			
1854	do 3....	do 4....	238	do 4....	do 18...	258				do 30	do 10	225			
1855	do 16....	do 12....	241	do 21....	do 24...	255				do 30	do 18	233			
1856	do 26....	do 13....	232	do 4....	do 18...	242				do 28	do 6	224			
1857	May 1....	do 15....	239	do 21....	January 31...	303				do 12	do 12	226			
1858	April 7....	do 7....	245	March 29...	do 10...	268				May 1....	do 7	226			
1859	do 1....	do 8....	252	do 15....	December 16...	270				April 26...	do 7	232			
1860	do 1....	do 6....	250	do 12....	do 16...	278				do 19...	do 10	234			
1861	do 5....	do 12...	249	do 24...	do 24...	278				do 26...	do 12	223			
1862										do 26...	do 12	223			
1863										do 24...	do 10	223			
1864										do 24...	do 10	223			
1865										do 24...	do 10	223			
1866										do 24...	do 10	223			
1867										do 24...	do 10	223			
1868										do 24...	do 10	223			
1869										do 24...	do 10	223			
1870										do 24...	do 10	223			
1871										do 24...	do 10	223			

[illegible]

RIDEAU CANAL.

No. 4—STATEMENT shewing the dates when the first and last vessel passed locks each season, from 1835 to 1861, inclusive.

Year.	Opened.	Closed.	Year.	Opened.	Closed.
1835	28th April.....	16th Nov	1848	17th April.....	30th Nov.....
1836	10th May	15th do	1849	25th do	30th do
1837	2nd do	1st December.....	1850	1st May.....	2nd December.
1838	2nd do	19th November	1851	28th April.....	24th November.
1839	22nd April	23rd do	1852	5th May	24th do ..
1840	22nd do	24th do	1853	13th do	24th do ..
1841	28th do	24th do	1854	3rd do	22nd do ..
1842	23rd do	25th do	1855	4th do	25th do ..
1843	2nd May.....	19th do	1856	3rd do	27th do ..
1844	24th April.....	23rd do	1857	2nd do	25th do ..
1845	26th do	28th do	1858	3rd do	21st de ..
1846	27th do	25th do	1859	27th April.....	19th do ..
1847	4th May	28th do	1860	2nd May.....	23rd do ..
.....	.....	.....	1861	30th April.....	29th do ..

RIDEAU CANAL.

No. 5—STATEMENT shewing the opening and closing of navigation at Ottawa Jones' Falls, Brewer's Upper Mills, and Kingston.

Year.	Ottawa.		Jones' Falls.		Brewer's Upper Mills.		Kingston.	
	Opened.	Closed.	Opened.	Closed.	Opened.	Closed.	Opened.	Closed.
1832	May 29.....	Nov 14....	July 30.....	Nov. 14....	.....	.....	.....	.....
1833	do 8.....	do 1....	June 7.....	do 7.....	.....	.....	.....	.....
1834	April 17....	do 14....	April 28.....	do 13.....	.....	.....	.....	.....
1835	do 27.....	do 16....	do 23.....	do 23.....	.....	.....	.....	.....
1836	May 10.....	do 15....	May 6.....	do 16.....	May 1.....	Nov. 20.....	.....	.....
1837	do 2.....	Dec. 1.....	April 30....	do 23.....	do 1.....	do 22.....	.....	.....
1838	do 2.....	Nov. 19....	do 25....	do 24.....	do 1.....	do 23.....	.....	.....
1839	April 22....	do 23....	do 20....	do 24.....	do 1.....	do 24.....	.....	.....
1840	do 22....	do 24....	do 23....	do 22.....	do 1.....	.....	.....	.....
1841	do 28....	do 24....	do 30....	do 24.....	.....	.....	.....	.....
1842	do 23....	do 25....	do 22....	do 26.....	.....	.....	.....	.....
1843	May 2.....	do 27....	do 29....	do 29.....	.....	.....	.....	.....
1844	April 24....	do 23....	do 22....	do 23.....	May 1.....	Nov. 24.....	.....	.....
1845	do 26....	do 28....	do 26....	do 28.....	April 26 ...	do 27....	.....	.....
1846	do 21....	Dec. 2	do 19....	do 30.....	do 19....	Dec. 1.....	.....	.....
1847	May 4.....	Nov. 28....	May 1.....	do 29.....	May 5.....	Nov. 24.....	.....	.....
1848	April 17....	do 27....	April 20....	do 30.....	April 21....	do 29.....	May 1.....	Nov. 30.
1849	May 16.....	do 30....	do 26....	do 30.....	do 26....	do 30.....	do 2.....	do 30.
1850	do 3.....	Dec. 2	May 2	do 30.....	do 30....	do 30.....	do 1.....	Dec. 1...
1851	April 28	Nov. 24.....	April 26....	do 12.....	do 26....	do 17.....	April 25....	Nov. 30.
1852	May 4.....	do 24....	May 1.....	do 23.....	May 3.....	do 23.....	May 1.....	do 30.
1853	April 27....	do 24....	April 27....	do 27.....	April 26....	do 29.....	do 1.....	do 30.
1854	May 1.....	do 22.....	do 27....	do 29.....	do 28....	do 29.....	do 1.....	do 30.
1855	April 30....	do 25....	May 2.....	do 28.....	May 1.....	do 28.....	do 1.....	do 28.
1856	May 1.....	do 27....	do 1.....	do 28.....	do 1.....	do 28.....	do 1	do 28.
1857	do 2.....	do 25....	April 22....	do 21.....	April 23....	do 23.....	April 23....	do 23.
1858	do 2.....	do 21....	May 1.....	do 19.....	May 1.....	do 16.....	May 1.....	do 22.
1859	April 27....	do 19....	April 20....	do 23.....	April 16....	do 27.....	April 16....	do 30.
1860	May 2.....	do 28....	May 1.....	do 25.....	May 1.....	do 26.....	May 1.....	do 29.
1861	April 30.....	do 26....	do 2... ..	do 23.....	do 1.....	do 20.....	do 1	do 25

No. 6—Opening and closing of navigation between Lakes Huron and Superior, at Sault Ste. Marie, from 1843 to 1861.

Year.	Opened.	Closed.
1843.....	.....	17th November.
1844.....	22nd April.....	23rd do
1845.....	24th do	9th do
1846.....	16th do	25th do
1847.....	9th May.....	26th do
1848.....	26th April.....	23rd do
1849.....	9th May.....	4th December.
1850.....	3rd May.....	17th November.
1851.....	26th April.....	27th do
1852.....	3rd May.....	23rd do
1853.....	28th April.....	27th do
1854.....	28th do	29th do
1855.....	2nd May.....	30th do
1856.....	3rd do	15th do
1857.....	8th do	1st December.
1858.....	3th do	20th November.
1859.....	3rd do	26th do
1860.....	25th April.....	29th do
1861.....	3rd May.....	29th do

In general, the above dates apply to the Straits of Mackinac.

(Signed,) JOHN WILSON,
C. W.

CUSTOM HOUSE,

Sault Ste. Marie, C. W.,
4th January, 1862.

—The following table, taken from the report of the canal Commissioners of the State of New York, shews the date of opening and closing of the Hudson river; also the time of opening and closing the Erie canal, from 1824 to 1860, and the opening of lake Erie, from 1827 to 1860.

OPENING AND CLOSING OF THE HUDSON RIVER.				COMMENCEMENT AND CLOSE OF NAVIGATION OF ERIE CANAL.			
River open.	Winters.	River closed.	Open days.	Canal open.	Canal closed.	Navigable days.	Opening of the Lake.
March 3, 1824.....	1824-25	January 5, 1825.....	309.....	April 30, 1824.....	December 4.....	219.....	April 21, 1827.....
" 6, 1825.....	1825-26	December 13, 1825.....	283.....	" 12, 1825.....	" 5.....	238.....	" 1, 1828.....
February 25, 1826.....	1826-27	" 24, 1826.....	302.....	" 20, 1826.....	" 18.....	243.....	May 10, 1829.....
March 20, 1827.....	1827-28	November 25, 1827.....	251.....	" 22, 1827.....	" 18.....	241.....	" 5, 1830.....
February 8, 1828.....	1828-29	December 23, 1828.....	220.....	March 27, 1828.....	" 20.....	269.....	" 8, 1831.....
April 1, 1829.....	1829-30	January 11, 1830.....	286.....	May 2, 1829.....	" 17.....	230.....	April 27, 1832.....
March 15, 1830.....	1830-31	December 25, 1830.....	283.....	April 20, 1830.....	" 17.....	242.....	" 23, 1833.....
" 15, 1831.....	1831-32	" 6, 1831.....	263.....	" 16, 1831.....	" 1.....	230.....	" 6, 1834.....
" 25, 1832.....	1832-33	" 21, 1832.....	289.....	" 25, 1832.....	" 21.....	241.....	May 8, 1835.....
" 21, 1833.....	1833-34	" 13, 1833.....	277.....	" 19, 1833.....	" 12.....	238.....	April 27, 1836.....
February 29, 1834.....	1834-35	" 15, 1834.....	291.....	" 17, 1834.....	" 12.....	240.....	May 16, 1837.....
March 25, 1835.....	1835-36	November 30, 1835.....	248.....	" 15, 1835.....	November 30.....	230.....	March 31, 1838.....
April 4, 1836.....	1836-37	December 7, 1836.....	248.....	" 25, 1836.....	" 26.....	216.....	April 11, 1839.....
March 27, 1837.....	1837-38	" 14, 1837.....	261.....	" 20, 1837.....	December 9.....	234.....	" 27, 1840.....
" 19, 1838.....	1838-39	November 25, 1838.....	257.....	" 12, 1838.....	November 25.....	228.....	
" 25, 1839.....	1839-40	December 18, 1839.....	286.....	" 20, 1839.....	December 16.....	241.....	
February 25, 1840.....	1840-41	" 5, 1840.....	285.....	" 20, 1840.....	" 3.....	228.....	
March 2, 1841.....	1841-42	" 10, 1841.....	268.....	" 21, 1841.....	" 2.....	228.....	

April 7, 1847.....	1847-48	December 25, 1847.....	263.....	May 1, 1847.....	November 30.....	214.....	April 23, 1847.....
March 22, 1848.....	1848-49	" 27, 1848.....	292.....	" 1, 1848.....	December 9.....	223.....	" 9, 1848.....
" 19, 1849.....	1849-50	" 26, 1849.....	286.....	" 1, 1849.....	" 5.....	219.....	March 25, 1849.....
" 10, 1850.....	1850-51	" 17, 1850.....	282.....	April 22, 1850.....	" 11.....	234.....	" 25, 1850.....
February 25, 1851.....	1851-52	" 14, 1851.....	293.....	" 15, 1851.....	" 5.....	235.....	April 2, 1851.....
March 28, 1852.....	1852-53	" 22, 1852.....	270.....	" 20, 1852.....	" 16.....	239.....	" 20, 1852.....
" 23, 1853.....	1853-54	" 21, 1853.....	274.....	" 20, 1853.....	" 20.....	245.....	" 14, 1853.....
" 17, 1854.....	1854-55	" 8, 1854.....	266.....	May 1, 1854.....	" 3.....	217.....	" 29, 1854.....
" 27, 1855.....	1855-56	" 20, 1855.....	268.....	" 1, 1855.....	" 10.....	224.....	" 21, 1855.....
April 11, 1856.....	1856-57	" 14, 1856.....	248.....	" 5, 1856.....	" 4.....	214.....	May 2, 1856.....
February 27, 1857.....	1857-58	" 27, 1857.....	303.....	" 6, 1857.....	" 15.....	223.....	April 27, 1857.....
March 20, 1858.....	1858-59	" 17, 1858.....	273.....	April 28, 1858.....	" 8.....	225.....	" 15, 1858.....
" 13, 1859.....	1859-60	" 10, 1859.....	273.....	" 15, 1859.....	" 12.....	242.....	" 7, 1859.....
" 6, 1860.....	1860-61	" 14, 1860.....	283.....	" 25, 1860.....	" 12.....	232.....	" 17, 1860.....

APPEN WELLAND

No. 1.—Depth of water on Lower Mitre Sill. Lock

Month.	1849.		1850.		1851.		1852.		1853.		1854.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January.....			12 0	11 9	11 9	11 8	12 2	12 2	13 6	13 3	13 6	12 6
February.....			12 1	11 11	12 7	11 9	12 4	12 1	13 6	13 0	13 1	12 8
March.....			12 6	12 1	12 7	12 1	12 9	12 4	13 9	13 4	13 6	12 6
April.....			12 11	12 6	13 0	12 7	13 6	12 10	13 11	13 7	13 6	13 0
May.....			13 3	12 11	13 3	13 2	14 4	13 6	15 0	13 11	14 5	13 7
June.....	13 2	13 0	13 4	13 3	13 5	13 3	14 7	14 3	15 6	15 0	14 5	14 0
July.....	13 1½	12 8	13 2	12 9	13 4	13 1	14 6	14 4	15 4	14 6	14 6	14 4
August.....	12 7½	12 5	12 8	12 6	13 1	13 0	14 3	13 10	14 5	13 0	14 5	14 0
September.....	12 5	11 10	12 6	12 4	13 0	12 8	13 10	13 5	14 3	13 9	14 2	13 5
October.....	11 11	11 8	12 4	11 8	12 7	12 3	13 5	13 4	14 2	13 3	13 6	12 9
November.....	11 10	11 8	11 8	11 6	12 4	12 3	13 4	13 3	13 7	13 0	13 1	12 4
December.....	11 8	11 7	11 8	11 8	12 3	12 2	13 6	13 2	13 8	12 11	12 5	11 7

WELLAND

No. 2.—Depth of water on Upper Mitre Sill. Lock

Month.	1849.		1850.		1851.		1852.		1853.		1854.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January.....					15 2	11 1	13 11	9 9	14 4	11 3	14 8	11 7
February.....			13 4	11 0	12 2	9 9½	12 6	11 5	12 9	12 10	12 7	11 0
March.....			15 0	11 6	13 2	11 4	13 8	11 2	14 0	12 11	13 7	11 3
April.....			12 10	11 6	13 5	11 1	14 2	9 10	13 10	11 2	13 8	11 0½
May.....	13 6	12 0	12 10	11 5	16 4	12 1	16 4	13 0	14 5	13 3	13 10	12 1
June.....	12 8	11 8	12 6	11 9	13 10	12 7	15 0	12 11	15 5	13 5	13 4	12 10
July.....	12 8½	11 6	12 10	11 9	14 3	12 6	14 11	12 2	14 5	13 5	14 3	12 9
August.....	13 3	11 11	12 9	11 5	13 3	12 6	13 6	13 0	13 9	13 3	13 2	12 1
September.....	12 6	10 9	12 5	10 8	13 5	12 1	14 5	12 6	14 6	12 2	12 8	11 8
October.....	12 5	10 9	13 2	11 1	14 1	12 1	13 5	11 7	14 11	12 3	13 10	11 8
November.....	13 10	11 7	12 4	10 9	14 3	12 1	13 10	11 10	13 5	12 0	14 5	11 7
December.....	13 8	11 6	14 10	9 10	14 7	11 10	17 7	12 4	15 10	11 10	14 8	11 3

DIX I.

CANAL.

No. 1. Port Dalhousie. From Lock Masters' Returns.

1855.		1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
12 9	11 6	12 2	11 9	11 10	11 6	14 10	14 3	15 1	14 7	13 11	13 7		
11 11	11 2	11 10	11 7	11 10	11 6	14 10	14 2	14 11	14 7	13 10	13 7		
12 9	11 3	12 2	11 8	12 7	11 8	14 10	14 5	15 0	14 7	13 10	13 6		
12 1	11 6	13 3	12 1	13 4	12 6	15 2	14 9	15 4	14 9	14 0	13 8		
12 11	12 0	14 0	13 3	14 3	13 6	15 9	15 2	15 8	15 3	14 0	13 7		
12 7	12 11	14 6	13 10	14 9	14 1	16 0	15 8	15 11	15 8	14 2	13 11		
13 10	13 7	14 7	14 3	15 0	14 8	16 2	15 10	16 0	15 9	14 4	14 1		
13 9	13 6	14 4	13 7	15 1	14 10	16 0	15 8	15 11	15 6	14 3	14 0	15 5	14 9
14 6	13 5	13 7	12 0	15 0	14 6	15 8	15 1	15 7	15 1	14 2	13 10	14 11	14 2
13 5	12 9	12 11	12 3	14 8	14 1	15 5	14 10	15 0	14 4			14 10	14 6
12 10	12 4	12 4	11 9	14 7	14 0	15 1	14 9	14 4	13 10			15 4	14 6
12 6	12 0	11 11	11 6	14 8	14 6	15 2	14 7	13 11	13 6			14 9	13 10

CANAL.

No. 27. Port Colborne. From Lock Masters' Returns.

1855.		1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
14 4	10 9	13 0	12 5	11 9	10 11	16 7	12 1	14 9	13 0	13 4	12 10	13 9	11 8
12 3	11 1	12 9	11 8	13 3	10 10	13 4	11 6	17 8	11 2	13 3	12 4	12 9	10 3
13 5	10 10	12 4	11 9	13 5	11 0	13 3	12 9	18 9	12 11	14 4	12 7	13 9	12 0
12 6	11 4	13 0	12 0	16 4	12 9	14 4	12 0	17 11	13 5	14 5	12 11	13 11	12 6
13 0	11 7	12 10	12 4	13 5	12 2	15 9	12 7	16 1	13 7	14 4	13 0	15 4	13 2
13 3	12 2	13 3	12 5	13 9	12 11	15 5	13 8	14 9	13 9	16 4	13 2	14 0	13 0
14 5	12 5	13 3	12 5	13 9	13 0	15 1	14 0	14 8	13 9	14 4	13 0	14 4	13 3
14 7	12 9	13 1	12 5	13 9	13 0	15 5	14 0	14 5	13 4	14 2	13 0	14 3	12 11
13 10	12 0	13 8	11 10	13 5	12 9	14 5	13 5	15 6	12 1	15 1	12 9	14 5	13 1
14 5	11 2	12 9	11 1	13 3	11 7	17 0½	12 5	16 3	12 4	13 5	12 7	14 10	13 0
15 7	12 2	17 0	11 3	14 10	12 5	14 2	13 0	16 2	12 9	16 2	12 4	15 10	11 7
14 5	12 3	17 7	10 6	15 8	12 6	17 3	13 0	13 7½	12 1	13 8	12 2	15 5	13 1

WELLAND

No. 3.—Depth of water on Lower Mitre Sill of Lock

Month.	1849.		1850.		1851.		1852.		1853.		1854.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
February .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....	11 0	9 1	12 10	9 5	12 4	10 6	12 4	11 0
May .....	.....	.....	11 6	9 8	12 3	10 4	14 6	11 6	13 8	11 0	12 0	11 0
June	11 2	10 6	10 8	9 10	11 7	10 6	12 4	11 10	13 4	12 0	12 10	11 0
July	11 6	10 4	10 10	9 8	12 6	10 11	12 11	11 7	12 6	10 10	12 3	10 5
August.....	11 0	10 6	10 9	9 4	12 2	10 9	12 2	11 4	12 0	11 4	11 10	10 8
September	10 11	9 1	10 11	9 3	12 5	9 11	13 2	11 1	12 6	10 6	11 9	10 2
October.....	11 0	9 1	10 11	9 0	12 6	10 0	11 11	9 10	12 10	10 7	11 7	9 9
November	11 11	9 0	10 2	9 0	12 6	10 0	12 1	10 2	11 9	10 6	15 0	9 3
December.....	11 8	9 0	10 11	9 0	12 3	10 3	12 6	10 9	15 3	10 6	11 6	9 10

RAPIDE

No. 4.—Depth of water on Lower Mitre Sill, Lock

Month.	1853.		1854.		1855.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January .....	.....	.....	10 6	9 0	8 6	6 9
February .....	.....	.....	10 0	9 0	8 0	7 0
March .....	.....	.....	9 9	9 0	8 3	7 0
April .....	.....	.....	9 9	9 0	9 3	8 0
May .....	.....	.....	11 0	9 9	9 6	8 6
June .....	.....	.....	11 3	10 9	10 3	9 6
July .....	.....	.....	11 0	10 9	10 3	9 9
August	11 6	10 9	10 6	9 9	10 6	10 0
September .....	.....	.....	10 0	9 3	10 6	9 6
October.....	.....	.....	10 6	8 8	10 8	9 9
November.....	10 6	9 3	9 3	8 5	10 0	9 3
December.....	10 0	9 9	8 6	7 0	10 0	9 0

FARRAN'S

No. 5.—Depth of Water on Lower Mitre

Month.	1849.		1850.		1851.		1852.		1853.		1854.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January							8 6	7 6	10 0	9 0	9 9	9 0
February							8 3	7 3	9 9	9 3	9 0	8 0
March							8 0	7 6	10 9	9 3	8 6	8 9
April			10 0	8 5	10 0	9 5	10 6	8 6	11 3	10 9	9 0	8 3
May					10 3	9 9	11 9	10 0	12 0	11 0	11 0	9 6
June	10 11	9 9	10 0	9 0	10 3	10 0	12 6	11 0	12 3	11 9	11 0	10 6
July	10 0	9 5	10 0	9 6	10 6	10 0	12 0	11 0	12 0	11 3	11 0	10 6
August	9 7	9 0	9 7	9 3	10 0	9 8	11 3	10 6	11 6	10 9	10 9	9 6
September	9 0	8 3	9 10	8 6	10 0	8 6	10 9	10 0	11 0	10 9	9 9	9 0
October	9 0	8 3	8 9	7 10	9 6	9 0	10 3	9 6	11 0	10 6	10 0	9 0
November	9 3	8 5	8 7	7 6	9 6	8 0	10 6	9 9	10 6	9 10	9 3	8 6
December					10 0	8 3	10 9	9 0	10 0	9 3	9 0	8 6

CORNWALL

No. 6.—Depth of water on Upper Mitre Sill.

Month.	1849.		1850.		1851.		1852.		1853.		1854.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January			9 6	8 2	10 4	5 1	10 4	8 2	10 11	9 11	11 0	9 1
February			9 11	9 1	9 11	6 0	9 2	8 5	10 11	9 11	9 11	8 11
March			10 0	9 2	10 3	9 5	9 11	8 5	10 11	9 11	10 11	9 2
April			10 10	9 5	10 7	9 6	11 8	10 0	11 7	10 5	10 6	9 9
May	10 6	9 9	10 10	10 0	10 10	10 0	11 0	9 6	12 2	11 2	11 3	10 3
June	10 7	10 2	10 8	10 1	11 0	10 5	12 0	11 1	12 1	11 9	11 5	10 6
July	10 5	10 0	10 6	10 0	10 11	10 6	12 0	11 0	12 0	11 5	11 4	10 3
August	10 1	9 7	10 3	9 9	11 0	10 0	11 4	10 7	11 5	10 10	11 1	10 0
September	10 0	9 2	10 1	9 1	10 5	9 6	11 1	10 5	11 1	10 3	10 8	9 5
October	9 7	8 6	9 8	8 11	10 6	9 5	10 8	9 5	11 8	10 2	10 9	9 9
November	10 2	9 0	9 7	8 0	9 11	9 1	10 9	9 10	10 7	10 1	10 6	9 3
December	10 1	8 11	9 11	8 7	10 4	8 5	10 6	9 11	10 10	9 10	9 10	8 6

POINT CANAL.

Sill. Lock No. 22.—From Lock Master's Return.

1855.		1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
8 9	7 9	8 9	8 0	8 9	8 0	10 6	10 0	10 0	9 6	10 6	8 2	8 9	8 4
8 3	7 9	8 6	8 0	8 9	8 3	10 8	9 6	9 6	9 6	8 9	8 0	8 9	8 3
8 9	7 6	9 0	8 0	8 9	8 3	10 0	9 6	10 3	9 3	8 9	8 3	9 0	8 3
3 3	7 9	9 9	8 0	9 9	8 3	10 10	10 0	10 6	9 9	9 3	8 6	9 0	8 0
9 0	7 9	10 9	9 9	10 9	9 9	11 3	10 3	11 6	10 0	8 9	8 6	11 3	9 0
10 0	9 0	10 9	10 3	11 3	10 9	12 0	11 0	11 3	10 0	9 0	8 8	9 9	9 3
11 0	10 0	10 9	10 0	11 3	11 0	11 9	11 3	11 6	11 3	9 6	8 3	9 9	9 6
11 8	10 3	10 3	9 9	11 0	10 9	11 9	11 9	10 6	9 0	9 6	9 0	9 9	9 6
11 3	10 0	9 9	9 6	12 0	10 6	11 9	11 0	10 3	9 0	9 3	8 0	9 9	9 3
10 3	9 9	10 0	8 0	10 6	9 6	11 3	9 9	10 0	8 3	9 0	8 3	9 9	9 3
10 0	9 3	9 0	8 3	11 0	9 6	10 3	9 8	9 3	8 6	11 9	8 6	10 0	9 3
10 0	8 0	9 3	7 6	10 9	10 0	10 3	9 6	9 9	8 9	9 9	8 8	9 0	8 6

CANAL.

Lock No. 21.—From Lock Master's Return.

1855.		1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
9 7	8 4	10 7	7 0	9 3	3 0	12 0	11 0	11 6	10 1	12 2	10 3	11 1	9 8
8 11	7 4	9 2	3 0	10 1	3 0	.....	.....	11 0	9 9	10 8	10 2	10 7	9 6
8 11	8 1	9 5	9 0	9 10	9 0	.....	.....	12 6	10 6	11 0	10 6	11 1	10 1
10 1	9 1	10 7	9 0	10 7	9 6	11 8	11 0	12 6	11 1	11 1	10 6	11 9	10 7
10 4	9 2	11 3	10 3	11 3	10 1	12 0	11 4	12 8	11 11	11 3	10 5	12 7	11 6
10 9	10 6	11 10	11 0	11 8	10 10	12 6	11 11	12 9	12 4	11 4	11 0	12 5	12 0
11 0	10 4	11 2	10 1	11 10	11 2	12 6	11 10	12 7	12 1	11 6	10 11	12 5	11 9
11 0	10 2	10 10	10 2	11 10	11 3	12 8	12 1	12 5	11 9	11 4	10 11	12 1	11 6
10 11	10 3	10 6	9 11	.....	.....	11 10	11 2	12 2	11 1	11 2	10 6	12 1	11 4
10 10	10 1	10 7	9 4	11 7	9 4	12 0	11 0	12 0	10 9	10 6	9 6	11 11	11 2
10 10	9 10	10 3	9 1	12 0	10 8	.....	.....	11 0	10 3	12 10	8 11	12 0	11 5
11 10	9 10	10 11	9 1	11 11	10 11	11 8	10 0	11 11	10 0	10 11	10 0	12 4	11 1

CORNWALL

No. 7.—Depth of Water on Lower Mitre Sill.

Month.	1849.		1850.				1851.				1852.				1853.				1854.			
	Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.		Highest.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
January .....	.....	.....	.....	.....	17	4	10	4½	19	6	14	10	28	0	13	9	25	3	11	3	21	9
February.....	.....	.....	.....	.....	18	9	11	8	14	8	9	0	24	0	20	3	20	0	12	3	21	0
March .....	.....	.....	.....	.....	14	5	10	1	17	2	11	0	24	0	12	0	18	6	12	4	22	7
April .....	.....	.....	.....	.....	10	8	10	2	11	5	10	2	13	2	11	0	12	4	11	7	16	0
May	10	0	9	8	11	2	10	6	10	8	10	4	11	7	11	5	12	3	11	11	12	0
June	9	10	9	7	11	0	10	5	11	0	10	8	12	2	11	5	12	10	12	0	11	6
July	9	10	9	8	10	7	10	4	11	0	10	10½	11	9	11	4	12	0	11	9	.....	10
August	9	8	9	6	10	6	10	2	10	11	10	8	11	6	11	1	11	8	11	5½	11	6
September.....	9	7	9	3	10	5	9	7½	10	10	10	3	11	1	10	10	11	6	11	2	10	11
October	9	6	9	1	9	9	9	5	10	4	10	1	10	10	10	7	11	4	10	11	10	4
November.....	10	1	9	4	9	10	9	4	10	3	9	10	11	5	10	5	10	11	10	10	10	4
December.....	10	7½	9	5	19	0	9	9	17	3	9	10	11	4	10	6	11	9	10	6	17	8

CANA L.

Lock No. 15.—From Lock Master's Returns.

1855.		1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
24 0	10 6	26 0	13 0	27 0	13 6	15 6	11 3	29 9	15 7	28 0	18 2	26 6	11 2
23 0	17 3	22 0	17 0	26 5	20 0	.....	.....	29 0	20 0	34 0	19 0	33 0	23 9
19 6	14 3	24 0	16 3	18 10	13 0	.....	.....	30 3	12 3	22 6	10 10	25 0	15 0
17 3	10 6	16 6	11 1	12 9	11 11	12 0	11 8	12 3	11 5	11 2	10 10	14 6	11 8
10 11	10 2	11 4	11 0	11 4	11 2	12 2	11 9	.....	.....	11 2	10 10	12 4	11 11
10 7	10 4	11 2	11 0	11 5	11 2	12 6	11 9	12 2	12 0	11 4	11 1	12 5	12 1
11 9	10 7	11 1	10 9	11 11	11 4	12 8	12 2	12 4	12 0½	11 6	11 2½	12 10	12 1
11 3	11 0	10 9	10 6	11 10	11 9	13 3	11 9	12 3	11 6	11 6	11 2	12 2	11 8
11 3	11 2	10 6	10 3	11 10	11 4	.....	.....	11 8	11 2	11 4	10 10	11 11	11 3½
12 0	10 10	10 5	9 7	11 6	9 8	11 2½	10 3½	11 11	10 4	11 2	10 9	12 1	11 6
11 0	10 10	9 10	9 2	10 8	10 4	.....	.....	10 11	10 3	11 4	10 5	12 0	11 5
16 5	11 0	16 6	9 2½	11 4	10 4	15 6	10 10	25 0	10 8	12 9	11 0	12 0	11 5

BEAUHARNOIS CANAL.

No. 8.—Depth of water on Upper Mitre Sill, Lock No. 14, from Lock Masters' returns.

Month.	1847.		1848.		1849.		1850.		1851.		1852.		1853.	
	Highest.		Highest.		Highest.		Highest.		Highest.		Highest.		Highest.	
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January	11 0	9 7	11 6	9 9	10 10	9 2	12 4	11 4	12 11	11 0	12 3	11 0	13 5	12 2
February	11 0	10 0	11 4	9 6	10 1	8 6	12 0	11 5	12 6	11 3	11 6	11 0	13 9	12 2
March	10 0	9 7	10 0	9 0	9 9	8 10	12 2	11 7	12 10	11 8	11 3	11 0	13 0	12 3
April	10 8	9 8	10 3	9 6	.....	.....	12 8	11 9	12 8	11 10	12 8	11 0	13 7	12 11
May	10 8	10 4	9 11	9 7	.....	.....	13 0	12 2	12 6	12 0	13 11	12 8	13 8	12 11
June	10 8	10 4	9 9	9 8	10 4	9 10	12 6	12 0	12 5	11 11	13 8	12 10	13 6	13 0
July	10 4	10 0	9 9	9 6	10 6	10 0	12 6	11 9	12 4	12 0	13 5	12 6	13 2	12 10
August	10 0	9 8	9 9	9 3	10 10	10 5	12 0	11 6	12 2	11 10	12 9	12 0	12 10	12 7
September	10 0	9 6	9 5	9 2	11 0	10 7	12 0	11 2	12 0	10 10	12 4	12 1½	12 10	12 4
October	10 0	9 7	9 2	8 8	11 4	10 4	12 0	11 2	11 8	11 6	12 2	11 10	13 4	12 2
November	10 0	9 7	9 3	8 9	11 6	10 11	11 6	10 10	11 9	11 4	12 2	11 9½	12 10	12 1
December	10 0	9 10	9 6	8 8	12 1	11 1	13 2	11 0	12 0	11 4	12 8	12 0	12 6	12 6

1854.		1855.		1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
13 3	12 2	11 6	11 0	12 0	12 0	11 6	11 0	14 3	12 7	13 7	12 5	14 0	12 4	13 6	12 2
12 7	11 11	11 8	10 0	11 4	11 4	12 0	11 0	13 8	12 11	13 2	12 2	12 10	12 2	13 2	11 6
12 11	11 9	11 8	12 9	12 2	11 2	12 0	11 6	13 6	12 6	13 9	12 6	12 10	12 3	13 4	12 4
12 6	12 0	12 4	11 2	12 8	11 3	12 8	11 11	13 3	12 9	13 9	12 11	12 9	12 4	13 9	12 10
13 6	12 5	12 4	11 8	13 0	12 4	13 1	12 0	13 4	12 10	13 8	13 4	12 8	12 4	13 11	13 4
12 10	12 6	12 9	11 9	12 10	12 4	13 2	12 7	13 8	13 2	13 8	13 5	12 9	12 6	13 9	13 4
12 10	12 6	12 9	12 2	12 6	12 3	13 2	12 10	13 11	13 3	13 7	13 2	12 11	12 4	14 2	13 4
12 6	11 10	12 6	12 0	12 4	12 0	13 1	12 9	13 7	13 2	13 5	12 11	12 10	12 6	13 5	12 10
12 2	11 9	12 4	12 0	13 3	11 10	13 0	12 8	13 4	12 2	13 2	12 4	12 11	12 9	13 2	12 11
12 1	11 6	12 4	12 0	12 0	11 5	13 0	12 4	13 2	12 5	13 3	12 0	12 8	12 1	13 4	12 8
11 10	11 2	12 4	11 10	11 8	11 0	13 2	12 5	12 11	12 3	12 11	12 0	14 6	12 1	13 8	12 6
11 7	11 0	12 8	12 0	12 0	10 6	13 2	12 5	13 6	12 1	13 8	12 2	14 0	12 4	13 3	12 9

BEAUHARNO

No. 9.—Depth of Water on Lower Mitre

Month.	1852.		1853.		1854.		1855.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January			14 0	11 0	18 0	11 6	16 0	12 6
February			13 0	12 6	18 6	17 0	19 0	16 6
March			14 0	12 6	18 0	14 0	17 0	11 6
April			13 0	12 0	14 0	13 8	13 6	11 6
May			13 4	12 6	14 6	14 0	13 0	12 6
June			13 0	13 0	14 0	12 0	13 0	12 6
July			13 0	14 4	12 0	11 0	12 0	11 6
August			11 0	10 0	11 0	10 6	11 0	10 6
September	10 0	9 10	11 8	11 0	10 6	10 0	10 6	10 6
October	10 2	10 0	11 6	11 0	9 10	9 6	11 6	10 6
November	10 6	10 0	11 6	11 0	10 6	10 0	11 6	11 6
December	10 6	10 0	11 6	11 0	13 0	10 6	12 0	11 6

AL.

No. 6, from Lock Masters' Returns.

56.	1857.		1858.		1859.		1860.		1861.		
Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	
0	12 6	16 0	11 6	12 10	11 0	15 0	13 6	17 0	14 0	16 6	13 9
0	15 0	15 0	13 6	15 0	13 0	16 3	14 0	16 3	15 0	19 6	15 0
0	13 0	13 6	11 9	13 6	12 5	16 3	13 6	15 0	11 6	16 0	13 6
0	11 6	12 9	11 9	12 6	12 0	14 6	13 0	13 0	12 0	16 0	14 6
0	11 0	14 0	12 6	12 6	12 0	14 6	13 0	13 0	12 0	16 0	14 6
0	11 6	13 9	13 6	12 6	12 0	14 0	13 4	12 10	12 0	15 3	13 0
0	10 6	13 3	12 3	13 3	11 8	13 4	12 0	12 0	11 4	13 0	12 4
3	10 6	12 3	12 0	11 8	11 5	12 0	11 2	11 4	11 0	12 4	11 5
0	10 6	12 3	12 0	12 6	11 6	11 5	11 0	11 9	11 4	11 8	11 0
0	10 0	12 0	11 0	12 0	11 3	11 0	10 6	11 9	11 2	12 3	11 8
0	10 6	11 6	10 0	12 0	11 5	11 6	10 6	11 7	11 2	12 5	11 6
3	10 6	12 0	11 0	13 6	11 5	14 0	11 6	13 9	11 7	12 4	11 6

LACHINE

No. 10.—Depth of water on Upper Mitre Sill

Month.	1849.		1850.		1851.		1852.		1853.		1854.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January .....	.....	.....	11 10	10 4	11 0	9 5	11 4	10 0	13 1	11 3	11 10	10 0
February .....	.....	.....	11 1	10 2	11 1	9 9	10 6	9 3	12 4	10 7	11 0	9 0
March .....	.....	.....	10 8	10 0	12 0	10 3	9 3	10 11	11 1	10 3	11 8	9 0
April .....	.....	.....	11 6	10 0	13 5	12 4	13 11	10 5	13 8	11 2	12 5	11 0
May	14 3	12 7	15 4	13 2	14 3	13 4	14 10	13 8	14 8	13 5	14 9	13 0
June	14 2	11 7	13 3	11 1	14 11	13 2	13 9	12 11	14 4	12 10	14 1	13 0
July	11 5	10 6	11 1	10 8	12 4	11 6	.....	.....	12 10	11 0	12 3	11 0
August	10 4	10 0	10 8	10 0	11 6	10 6	.....	.....	11 5	11 1	11 2	10 0
September	10 5	9 10½	10 3	9 8	10 7	9 11	11 2	10 7	11 6	10 9	10 5	10 0
October	10 2½	9 10	10 5	9 10	10 4	9 11	11 0	10 8	11 8	11 2	10 3	9 11
November	10 10	9 10	10 5	9 9	10 5	9 8	11 8	11 3	11 11	11 0	10 9	9 10
December	11 4	10 1	11 2	9 11	11 9	9 10	11 8	10 10	11 4	10 3	11 7	9 9

ANAL.

ock No. 5. From Lock Master's Returns.

1855.			1856.			1857.			1858.			1859.			1860.			1861.		
Highest.			Highest.			Highest.			Highest.			Highest.			Highest.			Highest.		
Lowest.			Lowest.			Lowest.			Lowest.			Lowest.			Lowest.			Lowest.		
in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
11	10	2	12	0	10	7	12	5	10	2	13	2	10	10	12	7	10	6	12	5
1	9	2	10	6	8	8	11	9	10	7	13	2	11	5	11	7	10	1	12	0
7	8	9	10	2	9	3	11	2	10	2	12	7	10	10	13	5	10	11	12	0
6	9	0	12	5	9	4	13	0	10	6	14	1	12	6	13	9	12	8	12	8
8	12	6	12	7	12	1	14	10	12	8	14	1	13	5	14	11	13	9	14	4
10	11	11	11	9	11	4	14	5	13	7	14	5	13	0	14	6	13	6	13	5
5	11	1	11	7	11	1	13	7	12	10	13	7	12	4	13	6	12	4	12	1
2	10	6	11	0	10	6	13	0	12	0	13	0	12	0	12	0	11	6	11	6
8	10	4	10	9	10	3	12	5	11	9	12	9	12	0	11	7	11	3	11	4
3	10	3	11	0	10	4	12	0	11	4	12	4	11	10	11	8	11	0	11	3
11	11	0	10	6	10	1	13	0	11	4	13	3	11	3	12	9	10	10	12	7
6	10	10	11	4	9	9	12	4	11	10	11	6	10	2	12	9	10	10	12	11

LACHINE

No. 11. — Depth of water on Lower Mitre Sill of Lock

Month.	1852.		1853.		1854.		1855.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January			35 3	25 7	37 9	31 6	31 9	27 7
February			33 3	31 7	32 10	29 3	27 4	25 0
March			32 2	31 3	32 0	29 10	27 4	24 9
April			32 2	22 2	32 0	25 0	34 6	24 7
May			25 0	22 7	27 0	23 2	24 7	22 4
June			24 0	21 3	23 8	20 7	23 0	21 0
July			21 3	19 0	20 8	18 10	21 2	18 11
August			19 0	18 7	18 10	17 5	19 1	18 0
September	18 7	18 0	19 4	18 1	17 8	17 1	18 2	17 9
October	19 0	18 2	19 5	18 7	17 6	17 1	19 7	18 0
November	19 10	18 5	20 0	18 9	18 3	17 1	22 0	18 7
December	24 3	19 3	30 8	18 4	30 3	17 11	25 7	19 0

ST. ANNE'S LOCK.

No. 12. — Depth of Water on Lower Mitre

Month.	1852.		1853.		1854.		1855.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
January			9 0	7 3	7 7	6 9	7 5	6 11
February			8 5	6 10	7 8	6 8	7 8	6 6
March			7 5	6 5	7 10	6 3	7 6	6 1
April			9 2	7 1	8 7	6 8	12 10	6 1
May			10 6	9 1	14 0	11 0	13 6	11 10
June			10 2	8 6	13 0	9 2	11 10	10 1
July			8 6	7 1	9 2	7 2	9 10	7 9
August			7 0	6 8	7 2	5 11	7 9	6 3
September	6 6	6 3	7 3	6 4	6 2	5 9	6 9	6 5
October	6 8	6 4	7 0	6 7	6 9	6 2	8 0	6 5
November	7 2	6 2	7 6	6 6	7 11	6 9	9 7	7 9
December	7 10	6 10			8 1	7 6	9 0	7 11

CANAL.

No. 1 (from Lock-master's Return.)

1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
39 6	27 0	34 6	29 3	38 3	24 0	36 5	30 6	34 8	30 2	36 4	31 4
30 11	20 9	31 3	28 9	33 2	30 0	30 10	28 0	29 11	27 0	31 5	28 9
29 6	26 3	30 7	28 8	32 0	29 6	36 5	28 0	29 6	28 2	32 4	29 10
36 9	21 0	32 6	21 0	36 6	22 2	29 7	21 9	28 7	20 6	41 7	24 3
22 0	20 2	25 5	20 5	23 7	22 4	24 6	22 2	23 9	20 7	27 2	25 5
20 0	19 1	23 10	33 0	23 10	21 9	23 9	21 11	22 4	20 4	25 9	21 7
19 3	18 10	22 9	21 0	25 5	20 7	22 0	20 4	20 4	18 10	23 3	20 7
19 0	18 0	21 5	20 6	20 11	19 7	20 4	19 3	19 3	18 7	20 8	19 4
18 5	17 9	20 6	19 6	21 5	20 0	19 6	18 10	19 1	18 0	19 9	18 9
18 10	17 7	20 5	19 2	21 2	19 4	19 6	18 7	19 0	10 5	20 10	19 10
17 10	17 0	21 7	19 7	20 2	18 9	22 2	18 8	20 0	18 10	21 3	20 0
34 10	17 1	23 1	19 10	33 6	18 2	35 11	20 3	32 7	18 11	26 5	20 0

OTTAWA RIVER.

Sill, (from Lock-master's Returns.)

1856.		1857.		1858.		1859.		1860.		1861.	
Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
8 7	7 6	7 9	7 1	8 4	7 9	7 8	7 2	8 9	7 5	8 2	7 3
7 8	7 0	7 10	6 11	8 8	7 11	7 4	6 8	7 10	7 1	8 4	7 4
7 8	6 3	7 10	7 0	8 8	7 2	9 6	6 9	8 6	7 8	8 9	7 9
9 8	6 2	10 10	7 2	11 2	8 10	10 1	8 9	10 0	8 3	13 4	8 0
10 6	8 8	13 10	10 9	11 9	11 2	13 0	10 2	13 7	9 11	15 4	13 8
8 7	7 6	13 6	11 7	11 0	9 6	12 2	10 2	11 0	9 3	14 2	9 9
9 1	7 6	11 6	9 11	9 5	8 0	10 0	8 1	0 1	7 3	9 10	8 4
7 5	6 5	10 1	8 10	8 5	7 0	8 2	6 11	7 3	6 9	8 6	7 8
7 7	6 9	8 11	8 1	9 3	7 0	7 6	6 8	7 3	6 8	8 0	6 10
8 6	7 7	8 5	7 8	8 8	8 0	8 0	7 5	7 4	7 0	8 6	8 2
9 3	7 8	10 0	7 5	8 7	7 6	10 1	7 4	8 4	7 4	9 8	8 2
8 3	7 8	8 10	7 11	7 4	6 11	9 3	8 7	8 8	7 4	9 3	8 0

RIDEAU

No. 13.—STATEMENT shewing the water level of the Ottawa River

	January.		February.		March.		April.		May.		June.		July.	
	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
1844	.....	.....	.....	.....	.....	.....	.....	13 2	21 5	19 7	18 2	16 3	13 6	13 0
1845	8 8	8 7	7 11	8 0	9 5	10 0	13 5	13 10	24 0	23 6	18 6	14 4	11 10	10 8
1846	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28 6	.....	.....	.....
1847	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1848	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1849	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1850	10 3	9 6	9 0	8 10	8 5	8 1	7 8	10 0	18 1	20 10	19 1	14 9	11 9	10 3
1851	9 8	8 7	8 3	8 1	8 9	8 9	14 4	16 8	18 8	20 6	19 11	18 4	15 6	12 5
1852	8 4	7 10	7 5	7 6	7 4	7 8	8 10	10 11	18 0	22 9	19 2	18 4	15 6	15 4
1853	8 3	11 0	9 7	9 4	8 10	8 1	7 10	11 10	14 10	17 8	18 0	17 3	13 9	10 7
1854	9 3	9 0	8 8	8 1	8 0	8 8	8 2	12 6	15 0	19 9	19 8	16 5	13 2	11 0
1855	10 4	9 4	9 2	9 6	8 1	7 9	7 5	8 5	21 0	21 8	18 6	17 10	14 6	11 4
1856	11 5	10 9	9 2	8 8	7 10	7 4	6 10	9 6	15 6	13 11	11 9	11 9	9 6	10 7
1857	10 2	9 5	9 7	9 9	10 7	9 9	9 8	13 3	15 9	21 6	21 9	21 4	19 0	15 1
1858	.....	.....	.....	.....	.....	.....	.....	16 1	17 2	17 9	18 0	16 5	12 9	12 0
1859	8 4	7 11	7 4	7 5	7 4	9 0	13 3	12 5	16 5	20 1	19 9	15 6	14 6	12 3
1860	9 9	11 4	10 1	9 7	9 7	10 1	12 4	13 5	14 2	19 9	18 3	16 5	14 9	10 5
1861	9 0	8 8	8 6	9 2	9 5	10 2	10 2	13 9	17 6	24 10	22 6	18 8	14 7	12 11

CANAL.

at the outlet Lock at Ottawa, as registered by the Lock-master.

August.		September.		October.		November.		December.		Remarks.
1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	
10 1	9 6	9 5	8 5	7 7	8 8	9 3	9 10	9 6	} 22nd Sept., 4ft.6in., lowest. 25th May to June 8, 28ft.6in., highest.
9 5	8 6	7 7	8 6	10 2	13 9	12 9	14 0	13 0	13 3	
.....	.....	5 7	4 10	5 1	.....	.....	.....	.....	.....
.....	
.....	
9 11	8 4	7 0	8 1	8 7	10 10	9 11	10 11	9 11	10 6	6ft. 3in. on 9th Sept., lowest.
11 4	10 0	8 10	8 9	7 3	7 6	8 5	9 1	8 6	8 7	
11 4	9 10	8 6	7 9	9 0	11 0	11 2	11 9	11 2	12 4	
7 9	7 11	7 2	7 10	8 6	9 6	8 6	10 5	11 9	10 0	
9 2	7 6	9 6	6 7	6 7	7 11	8 3	9 2	10 6	11 1	
9 6	7 9	7 6	7 9	7 7	9 9	10 1	13 10	12 7	13 0	
9 6	7 2	8 0	8 11	9 9	11 11	10 3	11 4	11 2	11 3	
15 0	14 9	12 8	11 1	11 5	10 4	9 5	13 4	11 8	10 0	
10 4	9 10	8 7	12 0	10 9	10 7	11 8	10 8	9 3	8 9	
10 3	9 3	7 6	7 11	9 9	10 6	9 7	9 11	12 4	12 9	
8 10	7 11	8 4	7 4	7 11	8 2	9 3	10 4	9 9	9 9	
10 10	9 6	8 3	8 0	8 9	12 2	10 7	13 2	10 8	13 0	

APPENDIX K.

PORT OF QUEBEC.

1.—STATEMENT of the number of Vessels, and their aggregate Tonnage, which have arrived at Quebec from sea, in each year, from 1764 to 1861, inclusive, distinguishing Steamers from Sailing Vessels from the year 1831 to 1861, inclusive, and of Vessels engaged in the coasting trade from 1853 to 1861, inclusive, the number of men employed, &c.

Year.	No. of Vessels.	No. of Tons.	No. of Men.	Year	No. of Vessels.	No. of Tons.	No. of Men.	REMARKS.
1764	67	5,496	568	1798	81	14,034	924	
1765	52	4,814	456	1799	125	16,183	1,660	
1766	66	6,999	601	1800	141	16,757	1,798	
1767	70	5,157	517	1801	175	20,517	1,564	
1768	46	4,069	360	1802	179	18,221	1,204	
1769	82	7,411	687	1803	167	28,744	1,530	
1770	48	5,870	364	1804	165	22,804	1,107	
1771	77	6,584	597	1805	157	18,795	1,097	
1772	62	5,313	494	1806	167	16,756	1,068	
1773				1807	193	18,355	1,880	
1774				1808	334	70,275	3,220	
1775				1809	517	85,476	4,126	
1776				1810	627	134,204	5,308	
1777	63	5,746	509	1811	582	116,687	5,553	* The compiler unable to ascertain the precise number.
1778				1812	399	86,196	3,959	
1779				1813	190	43,856	2,200	
1780				1814	173	31,092	1,456	
1781				1815	184	35,922	1,794	
1782				1816	281	58,300	2,889	
1783	69	8,792	724	1817	332	77,715	3,629	
1784	32	5,164		1818	358	90,118	4,018	
1785	58	8,834	586	1819	645	150,122	6,965	
1786	74	10,006	547	1820	585	147,754	6,767	
1787				1821	434	102,786	4,645	
1788	58	8,199	653	1822	612	145,953	6,450	
1789				1823	569	132,634	6,130	
1790	30	8,566	461	1824	619	150,000	8,047	
1791	61	14,760	826	1825	796	195,698	10,348	
1792	163	12,301	659	1826	714	179,949	9,282	
1793	114	15,758	933	1827	619	152,712	8,080	
1794	113	22,129	1,274	1828	716	163,472	9,340	
1795	117	22,447	1,678	1829	900	236,575	11,700	
1796	67	11,050	890	1830	896	227,275	11,648	
1797	89	19,072	1,077					

Sailing Vessels and Steamers.

Year.	No. of Vessels.	No. of Tons.	No. of Men.	No. of Steamers	No. of Tons.	No. of Men.	REMARKS.
1831	1,026	203,160	13,329	1	363	21	The "Royal William" was the first steamer that crossed the Atlantic from this port
1832	944	260,708	12,264	1	363	21	
1833	940	245,705	10,855	1	363	21	
1834	1,089	295,550	12,828				
1835	1,105	311,490	13,425				
1836	1,152	344,406	14,445				
1837	1,092	313,885	13,237				
1838	1,026	333,133	13,552				
1839	1,068	357,837	14,262				
1840	1,247	427,839	16,691	5	3,112	156	
1841	1,221	425,118	16,443	15	5,037	221	
1842	861	295,370	11,816	11	4,279	187	
1843	1,316	428,419	16,399	11	4,668	204	
1844	1,220	446,474	16,494	12	4,668	204	
1845	1,489	576,541	20,932				
1846	1,480	568,225	20,611				
1847	1,212	479,124	17,661				

From the year 1831 to 1842, inclusive, no steamers crossed the Atlantic for this port

The "Unicorn" was the only steamer that navigated between this port and Nova Scotia from 1840 to 1844 inclusive

From the year 1845 to 1862, inclusive, no steamers crossed the Atlantic for this port

Sailing Vessels and Steamers.—(Continued.)

<i>Yr.</i>	<i>No. of Vessels.</i>	<i>No. of Tons.</i>	<i>No. of Men.</i>	<i>No. of Steamers.</i>	<i>No. of Tons.</i>	<i>No. of Men.</i>	<i>REMARKS.</i>
18	1,188	452,436	16,423	This line of steamers came from Liverpool to this port for two years only, by contract.
19	1,184	465,088	16,571	.....	.....	.....
20	1,196	465,804	16,092	.....	.....	.....
51	1,300	533,427	17,753	.....	.....	.....
52	1,234	506,123	16,636	.....	.....	.....
53	1,346	567,857	19,109	5	2,881	251	The Montreal Ocean Steamers, the Glasgow Line of Steamers, the Government Tug Boats, and other steamers.
54	1,405	607,598	19,541	11	11,328	760	
55	742	348,430	11,082	.....	.....	.....
56	988	460,561	14,650	18	16,599	1,127	
57	1,259	588,352	18,556	24	21,092	1,382	
58	979	481,720	14,886	28	19,933	1,570	
59	912	462,305	13,740	58	48,679	3,306	
60	1,191	616,199	17,807	61	50,759	3,492	
61	1,277	703,908	19,339	67	71,894	4,335	

Coasting Trade Vessels below this Port, from 1853 to 1861, inclusive.

<i>Yr.</i>	<i>Vessels.</i>	<i>Tons.</i>	<i>Men.</i>	<i>Year.</i>	<i>Vessels.</i>	<i>Tons.</i>	<i>Men.</i>	<i>REMARKS.</i>
1853	109	4,964	400	1858	146	9,372	866	No return of this trade was kept previous to the year 1853.
1854	91	4,343	337	1859	160	11,454	1,070	
1855	101	5,001	364	1860	177	12,934	1,160	
1856	162	6,126	490	1861	227	15,910	1,536	
1857	130	6,265	495					

No. 2.—LIST of number and Tonnage of Sea-going Vessels built in Quebec far back as the Records can show (1787) giving the number above below 100, 500, 1000, 1500 tons and upwards.

Year.	100 Tons and under.		500 Tons		1000 Tons.		1500 Tons.		Over 1500 Tons.		Total Ships
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	
1787	16	753	3	677							19
1788	58	2365									58
1789	10	452									10
1790	16	334	2	170							12
1791	11	452	1	111							12
1792	5	191	1	128							6
1793	11	364	3	545							14
1794	7	242	3	691							10
1795	16	659	3	705							19
1796	8	434	5	843							13
1797	9	389	5	1130							14
1798	8	340	5	798							13
1799	16	741	14	4280	2	1167					32
1800	10	437	10	2680	1	840					21
1801	14	637	9	2223	1	544					24
1802	10	736	10	2074	1	560					21
1803	16	833	14	2535							30
1804	18	1113	7	1411							25
1805	9	528	6	1318							15
1806	12	632	6	1700							18
1807	7	308	8	2420							15
1808	5	226	8	2833	2	1974					15
1809	9	417	12	2998							21
1810	13	763	21	4195	1	575					35
1811	19	986	20	9612	5	3093					44
1812	11	549	23	6392							34
1813	9	541	9	2774							18
1814	17	898	7	2424	1	594					25
1815	28	1321	10	1524	1	608					39
1816	31	1462	7	2081	1	670					39
1817	30	1352	1	902	1	1336					36
1818	29	1436	7	1376	1	554					37
1819	15	726	10	2940							25
1820	8	311	8	1770							16
1821	11	666	8	1588							19
1822	11	469	9	2216							20
1823	26	1209	12	2197							38
1824	13	725	21	6083					1	* 3690	34
1825	19	1041	63	18254					1	† 5294	82
1826	26	1478	38	17694							64
1827	27	1621	34	7851							61
1828	25	1434	35	7788	1	560					61
1829	17	973	16	4586	1	568					34
1830	10	604	15	4189							25
1831	25	1392	10	2871	3	1907					38
1832	11	618	10	2435	3	1842					24
1833	13	935	7	2271	4	2392					24
1834	12	617	17	4557	6	3836					35
1835	11	609	12	2894	7	4509					30
1836	13	749	9	2751	9	6855					31
1837	18	876	6	1885	10	7418					34
1838	16	823	11	2721	8	5814					35
1839	19	885	11	3453	15	8324	1	1267			46
1840	19	979	16	4577	29	21005					64
1841	■	1300	15	3502	27	18320					64

* Columbus, constructed with a view of erasing the timber duties in the United Kingdom.

† Baron of Renfrew.

LIST of number and Tonnage of Sea-going Vessels, &c. —(*Continued.*)

No.	100 Tons and under.		500 Tons.		1000 Tons.		1500 Tons.		Over 1500 Tons.		Total	Total
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
.....	34	1961	13	3769	10	6891	.....	.....	.....	.....	57	12621
.....	23	1278	7	2022	9	6085	3	8351	.....	.....	42	12786
.....	18	1046	7	1428	13	9639	2	2101	.....	.....	40	14214
.....	8	337	11	3019	22	15626	5	5731	.....	.....	46	24713
.....	14	634	4	1315	16	11901	5	5864	.....	.....	39	19714
.....	26	1410	11	3482	30	22874	7	7974	.....	.....	74	35740
.....	24	1552	12	3493	13	10354	6	6899	.....	.....	55	22298
.....	35	2157	14	2972	16	13371	8	9660	.....	.....	73	28160
.....	33	2036	10	2555	21	18495	10	11064	.....	.....	74	34154
.....	17	1168	12	2284	17	14890	20	23263	.....	.....	66	41605
.....	14	934	14	3070	12	10535	7	8497	2	3369	49	26405
.....	28	1619	21	4488	9	6746	26	32484	5	8691	89	54028
.....	20	1140	21	3645	14	10612	19	23903	4	7254	78	46554
.....	39	2048	30	5974	10	7961	15	17789	1	2030	95	35802
.....	41	2167	22	6335	14	11856	12	13982	1	1502	90	35842
.....	30	1586	13	3355	30	22273	9	9872	1	1558	83	38644
.....	23	1102	8	1848	15	11902	5	5666	.....	.....	51	20518
.....	16	667	13	2737	7	5223	5	5841	.....	.....	41	14468
.....	25	1234	10	2660	12	9111	8	9580	.....	.....	55	22585
.....	19	832	9	2657	15	12818	8	9239	.....	.....	51	25546
	1364	70818	931	238234	447	333734	181	214027	16	33388	2939	890201

CUSTOM HOUSE, *Quebec*, 4th March, 1862.

No. 3.—STATEMENT of the amount of produce received at Port of Montreal by Steamers and all other Vessels, *vid* the St. Lawrence Canals, during the navigable season of 1861.

	Flour.	Wheat.	Indian Corn.	Rye.	Peas.	Oats.	Barley.	Ashes.	Pork.	Beef.	Butter.	Apples.
By Steam vessels	Barrels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
	577,197	703,956	123,263	10,296	190,674	16,857	14,952	.....	8,440	.....	.....	.....
Sailing vessels.....	190,922	5,885,138	1,427,413	14,220	1,190,805	88,424	111,636	.....	1,584	.....	.....	.....
	768,119	6,589,094	1,555,686	24,516	1,381,479	105,281	126,588	11,553	10,024	245	39,380	45,549

COMPARATIVE STATEMENT of the receipts of Western produce, at the Port of Montreal and by way of the St. Lawrence Canals, during the year 1861, and the exports during the same period.

	Ashes.	Flour.	Wheat.	Indian Corn.	Rye.	Peas.	Oats.	Barley.	Pork.	Beef.	Oatmeal.	Butter.	Lard.	Copper Ore.
Total Receipts.....	Barrels.	Barrels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Tons.
	30,885	991,694	7,392,956	1,516,757	97,364	1,251,241	78,708	101,194	19,940	1,381	19,135	68,936	2,480	250
do do by Canal†	11,553	763,119	6,589,094	1,555,686	24,516	1,381,479	105,281	126,588	10,024	245	.....	39,380	.....	.....
do Exports.....	26,361	653,143	6,022,377	1,476,025	.....	1,654,03	311,101	1,819	857	2,264	33,463	60,681	4,312	.....

*Quantities furnished by Secretary of the Board of Trade.
† do do Collector of Tolls.

LACHINE CANAL OFFICE,
Montreal, 5th February, 1862.

PORT OF MONTREAL.

No. 4.—STATEMENT of the opening and closing of navigation, arrivals and departure, tonnage, &c., of sea-going vessels, for the following years.

Year.	Opening of Navigation.	Close of Navigation.	First arrivals from sea.	Last vessel for sea.	Steamers.		Sailing vessels.		Lower Port vessels.		Sea-going vessels.		Greatest number in Port at one time.	
					No. of	Tonnage.	No. of	Tonnage.	No. of	Tonnage.	Total No. of	Gross Tonnage.	Date of	Number.
1854	April 25 ...	Dec. 6 ...	May 20 ...	Nov. 23 ...	6	5,545	174	58,416	78	6,949	258	70,910	Oct. 16	21
1855	" 28 ...	" 12 ...	" 9 ...	" 20 ...	6	5,545	90	38,433	107	9,721	197	48,154	June 14....	30
1856	" 24 ...	" 3 ...	April 30...	" 24 ...	16	14,276	117	47,497	114	9,548	247	71,321	" 9.....	26
1857	" 18 ...	" 13 ...	May 1 ...	" 25 ...	9	7,541	123	51,795	95	8,404	227	67,740	" 13.....	26
1858	" 9 ...	" 12 ...	April 30...	" 24 ...	16	17,887	127	53,553	82	7,369	225	78,909	" 5.....	22
1859	" 4 ...	" 11 ...	May 3 ...	" 20 ...	35	43,704	118	43,705	77	7,251	230	94,660	" 3.....	23
1860	" 10 ...	" 7 ...	April 30...	" 25 ...	37	45,387	149	69,742	73	6,470	259	121,559	Oct. 7.....	35
1861	" 24 ...	" 22 ...	" 27...	Dec. 4.....	40	51,298	433	202,601	101	7,894	574	261,793	June 6.....	117

(Signed,)

A. M. RUDOLF,
Harbour Master.

HARBOUR MASTER'S OFFICE,
Montreal, 5th February, 1862.

5.—STATEMENT of the number of river steamers and sailing vessels with their tonnage, from the year 1851 to the year 1861, both inclusive; also the greatest number in Port at one time, with their tonnage.

Year.	Greatest number of River Steamers in Port on one day.		Greatest number of River sailing craft in Port on one day.		Total number of River Steamers in Port in one year.		Total number of River sailing vessels in Port in one year.		Total number of all River craft in Port each year and the gross Tonnage.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1851	8	600	79	3950	468	91488	3141	221695	3609	313183
1852	10	750	82	4100	409	33706	3700	300898	4109	334604
1853	8	650	91	4550	318	62087	3179	255428	3497	317515
1854	13	975	76	3800	571	111263	3047	244866	3618	356129
1855	16	1200	91	4905	586	114411	2687	221588	3273	335999
1856	16	1357	150	6750	531	102634	2780	221639	3311	324293
1857	19	1425	118	4860	635	123955	3090	230587	3725	354542
1858	17	1275	117	4820	867	169274	3257	264872	4124	434146
1859	18	1350	96	4750	801	177550	3397	281315	4198	451065
1860	23	1725	137	5850	909	144742	3568	253410	4558	398152
1861	28	2350	196	9850	982	152872	4265	377352	5247	530224

HARBOUR OFFICE,
February 5th, 1862.

[Signed,]
JOHN FERNS,
Wharfinger.

CORNWALL CANAL.

No. 8.—STATEMENT furnished by the Collector, shewing the number of vessels which passed through the Canal, during the following years.

1859.

Description of Vessel.	under 200 Tons.		Over 200 and under 300 Tons.		Over 300 and under 400 Tons.		Over 400 Tons.		Number of vessels.		Total both ways.
	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	Up.	Down.	
Steamers	387	37	74	1	.....	.....	.....	.....	461	38	499
Propellers.....	49	45	26	25	1	1	.....	.....	76	71	147
Sailing Vessels.....	345	288	42	37	7	25	.....	1	394	351	745
Total.....	781	370	142	63	8	26	.....	1	931	460	1391.

1860.

Steamers.....	412	60	83	17	.....	.....	.....	.....	500	77	577
Propellers.....	70	72	52	50	.....	1	.....	.....	122	123	245
Sailing Vessels.....	501	452	113	113	13	17	.....	1	627	583	1210
Total	983	584	253	180	13	18	.....	1	1249	783	2032

1861.

Steamers.....	469	106	83	4	.....	.....	.....	.....	552	110	662
Propellers	97	102	58	52	1	1	.....	.....	156	155	311
Sailing Vessels.....	1101	1056	161	166	26	21	.....	1	1288	1244	2532
Total	1667	1264	302	222	27	22	.....	1	1996	1509	3505

ST. ANN'S LOCK, OTTAWA RIVER.

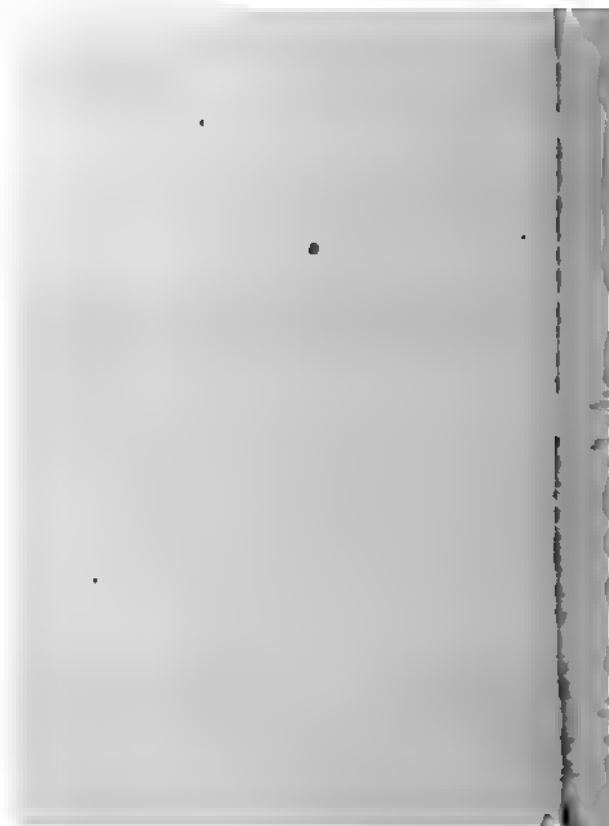
No. 10.—STATEMENT shewing the number of vessels and their a
which passed through the St. Ann's Lock, during the followi

	Upward bound Vessels, &c.			Downward bound Vessels, &c.		
	Steamers.	Sailing and other vessels.	Freight in Tons.	Steamers.	Sailing and other vessels.	Freight in Tons.
1855.....	410.....	1048.....	10813	411.....	1005.....	3595½.....
1856.....	423.....	954	13101½.....	382.....	826.....	4069
1857.....	436.....	1058.....	10412½	380.....	995.....	3368
1858.....	393.....	1114.....	11816	348.....	1067.....	4425
1859.....	447.....	1238.....	13669	403.....	1157.....	4598
1860.....	486.....	1433.....	14589	435.....	1341.....	5139
1861.....	494.....	1397.....	15081	437.....	1322.....	4176

(Signed)

JOHN BARR

Collect



APPENDIX N.

REPORT ON POINTE PELÉE LIGHT HOUSE.

TORONTO, 7th March, 1862.

SIR,—I have the honor to enclose herewith an approximating estimate for the erection of the light house tower, on Point Pelée, and for the securing of the caisson in which it stands.

The tower was well framed, fitted thoroughly, all the parts painted and marked, and transported to the site; but before erecting it, the filling of the caisson had to be made into, for the purpose of making a proper stone platform on which to rest the tower, to which it could be securely bolted down.

On opening into the filling, instead of finding it composed of heavy stone masonry, it was found to be chiefly of small stones, indiscriminately laid, and the mortar or cement that was used had never set or bonded. The consequence was, that it had to be removed to a great depth, and masonry of heavy flat-bedded ashlar, laid in cement and well bedded, substituted. Sufficient of this was effected, before winter set in, to enable the tower to be erected, the lantern placed, and the light exhibited some months before the close of navigation; but the heavy storms which prevailed almost without interruption, near, on lake Erie, rendered it a work of unusual delay, difficulty and cost. From the isolated and isolated position of the caisson, it was impossible at times, (for weeks together,) to get the steamboat and stone barges alongside it. The lengthened charter of the vessel and hire of the men caused thereby, added considerably to the expense.

But little is required to complete the tower, &c. In the estimate of the cost of which, we included that of means to extinguish fire. From the insulated position of this light house, its distance from land and the difficulty of getting to, or from it at times, I consider it indispensable that the men in charge should have efficient means at command to subdue fire, in case of such a casualty; those estimated for, consist of a tank capable of holding a thousand gallons, strongly framed and lined with lead, placed on the upper floor, supplied with a suitable forcing pump, with iron suction and rising main, notice pipe, &c.; also, a ladder from the tank to the different floors; each of which to have fifteen feet of hose attached, with brass stop-cock, nozzle, &c., &c.

It is very desirable that arrangements for the completion of this work should be made as soon as possible, in order that it may be commenced when the weather will permit of it.

As the tower platform is now securely laid, the remaining masonry of the caisson may be done by contract; in which case the contractor should provide the necessary steamer, barges, &c., &c.

The finishing of the tower consists chiefly in the caulking of the lantern floor, and the joints, bolting on some knees, fixing some stay and hoop bars, arranging the lamp, giving the tower two more coats of paint, &c., &c., for most of which the materials are on hand; this work would be best done by engaging two or three trustworthy mechanics who could be accommodated in the tower.

The old light on the end of Pelée Island, will be secondary to this new one, on the point of the reef. I am of opinion, that as the latter will be first seen on going up lake, it is important it should be visible as far as possible—the light on it should therefore be a white one, and that on the Island, at present white, should be changed into a red one. If this is approved of, immediate notice should be given in the papers of the Great Lake Ports, American as well as Canadian.

I have the honor to be, Sir,

Your obedient servant,

(Signed,)

HAMILTON H. KILLALY.

**ESTIMATE OF THE COST OF COMPLETING THE LIGHT HOUSE TOWER, WITH KEEPER'S
APARTMENTS, &c., &c., ON PELÉE REEF.**

Caulking upper platform, angle joints around windows and doors, &c...	\$ 80 00
Painting	100 00
Sundry small joiners' work, bolting knees, &c.....	150 00
Fire extinguishing apparatus and tank.....	320 00
Boat cranes, winches, outer steps, lamp frames, &c.....	250 00
	<u>\$900 00</u>

Estimate of the cost of securing the caisson at Pt. Pelée reef, on which the light house stands: 280 yards of masonry of heavy ashlar, with dressed top and bottom beds, and radiated joints, dowelled and fitted to the caisson, laid in cement and well grouted; cranes and other machinery found by the contractor, at \$10 per yard.....\$2800 00

1 steamer and crew at \$50 per day.

1 scow and crew at 15 "

\$65 per day for say 65 days.....	4225 00
Iron in dowels, cramps, bolts, screw bands, sheeting protection against ice, &c , &c.....	500 00
	<u>\$7525 00</u>

To complete tower.....	\$ 900 00
" secure caisson.....	7525 00
	<u>\$8425 00</u>

Superintendent to live in the tower during the work, say 3 months or 90 days, at \$4.....	360 00
	<u>\$8785 00</u>

GENERAL REPORT

OF THE

Canadian Minister

Commissioner of Public Works

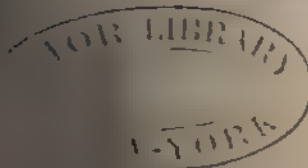
FOR THE

YEAR ENDING 31st DECEMBER, 1862 :

FURNISHED

In compliance with the provisions of the 29th chapter of the Consolidated Statutes of Canada, section 24.

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Printed by order of the Legislative Assembly.  
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QUEBEC:

PRINTED BY HUNTER, ROSE & LEMIEUX, ST. URSULE.
1863

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REPORT

OF THE

Commissioner of Public Works,

FOR THE YEAR 1862.

To His Excellency the Right Honorable CHARLES STANLEY,
Viscount MONCK, Governor General of British North
America, &c., &c., &c.

MAY IT PLEASE YOUR EXCELLENCY :—

In conformity with the 24th section of the 28th chapter of the Consolidated Statutes of Canada, which requires that “ the Commissioner shall make and submit to the Governor in Council, an Annual Report on all the works under his control, to be laid before both Houses of the Legislature, within twenty-one days from the commencement of each session, showing the state of each work and the amount of the receipt and expenditure thereon, with such further information as may be requisite,” the undersigned has the honor to make this Report to Your Excellency.

In rendering an account of the transactions of this Department for the whole of the past year, it is proper to observe that the undersigned did not enter upon the duties of his office as Commissioner of Public Works until the 24th May, 1862, and that his responsibilities commenced only at that date.

In view of the financial position of the Province this year, the undersigned has thought it expedient to restrict the works to be constructed within the narrowest limit compatible with the wants of the country.

A reduction in the general expenditure of this Department may, no doubt, be effected ; but this result is only to be attained gradually, by careful and unceasing attention to the increased business connected with this branch of the public service.

The aim of the Government, in the construction of the canals, was not only to promote our own internal trade, but also to attract the commerce of the vast countries of the West. It cannot be said that this end has thus far been attained in a manner commensurate with the large sums expended by Canada for that purpose.

The undersigned has directed special attention to the means of rendering the Public Works more productive. With this view he submits the following observations :

INLAND NAVIGATION.

In the possession of the River St. Lawrence, flowing for more than six hundred miles entirely within their own border, the people of Canada have an invaluable inheritance, well worthy of their provident care and attention, and of the large public expenditure heretofore so liberally bestowed upon its improvement.

The clear waters of this great river drain an extent of country larger than France,—a country which, for the salubrity of its climate and the fertility of its soil, has been classed amongst some of the most favored portions of the world. The great Inland Lakes, of which this River forms the natural outlet to the ocean, alone exceed in extent the area of Great Britain, and comprehend more than half the fresh water of the globe.

The coast line of these great lakes and of the River St. Lawrence, which, by the enterprise of the people of this Province, has been opened to the navigation of vessels of four hundred tons burden, at a cost of upwards of fourteen millions of dollars, measures 5,600 miles in extent; about one half of which is American, fronting upon eight of the Northern States of the Union, and the other half Canadian territory.

It was naturally expected that upon the opening of this channel to the ocean for so vast an extent of inland navigation, by means of the Welland and St. Lawrence Canals, the geographical position and commercial advantages of the route would be so great as to draw through it the Western trade, and that the tolls to be collected on this trade would not only pay the interest upon the cost of the improvements, but also afford a permanent and legitimate source of revenue to the Province; and that, as trade increased, the large amount of these tolls would admit of a gradual and corresponding reduction in the customs duties: thereby promoting the general interests of commerce and the material welfare and prosperity of the country.

In the early settlement of the Province, and, indeed, until the opening of the Erie Canal in 1825, the trade of the country bordering upon the river and the upper lakes found its way to the sea by Montreal and Quebec. But upon the opening of that canal, the products of the West were at once diverted to the other side of the boundary line, and taken to New York; and notwithstanding the noble efforts which have since been made by Canada to regain a fair share of this trade, by the construction of canals of more than double the tonnage capacity of the Erie Canal, and by the formation of a more direct and cheaper channel of inland navigation, still, such has been the commanding influence of that great commercial metropolis in drawing trade to itself and in keeping down the price of ocean transport, that these efforts, though not fruitless, have not been so successful as at first anticipated.

A vast stream of traffic has been diverted from the St. Lawrence, and continues to flow through the Erie Canal with augmented volume, notwithstanding the railway competition it had to encounter in later years. In 1861, the bulk of property transported both

ways upon it amounted to upwards of four and a half millions of tons, of the value of one hundred and thirty millions of dollars, and yielding to the State, in tolls, a revenue of nearly four millions of dollars.

The St. Lawrence route, on the other hand, was not fully opened until 1847, and the returns during a series of years show that, with considerable fluctuations and reactions, the traffic has gradually increased, though not in so marked a degree as might reasonably have been expected. The bulk of property transported both ways through these canals amounted, in 1861, to 1,020,483 tons through the Welland, and 886,908 tons through the St. Lawrence; and the revenue which would have been derived that year from this traffic, had the usual tolls of former years been imposed, would have amounted to \$392,289: scarcely more than a tithe of that collected the same year upon the Erie Canal.

Such, by way of comparison, have been the results, so far, of the two rival routes for the Western trade.

The vast importance of this trade is shewn, not only by its present volume, but by the fact of its rapid increase from year to year, as fully made known by the investigations instituted under the authority of the Commissioners of this department in 1849. Taking a period of ten years on the Erie Canal, and of three years on the Welland Canal, previous to 1849—before railways came into competition,—it was found that the actual tonnage of property which passed through these routes from the west increased at the average rate of twenty per cent per annum. (See the Commissioners' report for 1849.)

Upon this ratio certain estimates for the future were ventured upon; but the introduction of railways at first and the taking off of the tolls more recently, and, still later, the closing of the Mississippi, have proved the impossibility of making any reliable calculations in reference to this trade, when extended over so long a period.

With a view of regaining the western trade, the Provincial Government, by an order in Council dated 28th May, 1860, but taking effect the 19th of the same month, abolished the tolls on the Provincial Canals, under certain regulations, "in furtherance of the views and policy expressed upon that subject during the recent session of the Provincial Parliament." The conditions of these regulations were that vessels passing through the Welland Canal should continue to pay tolls according to existing tariffs, but that ninety per cent of the tolls so paid should be refunded whenever such vessel entered the St. Lawrence Canals, or reported inwards at any Canadian port on Lake Ontario or on the River St. Lawrence; and *vice versa*—vessels and their cargoes coming up through the St. Lawrence Canals, or hailing from any Canadian port and passing upwards through the Welland Canal, paid only ten per cent of the toll established on that Canal. The St. Lawrence Canals, however, were made unconditionally free from tolls.

This measure was looked upon at the time as conferring a great boon upon the trade, and it was considered that this generous policy would have the effect of diverting through Canada a much larger share of the products of the west; while the incidental advantages to be derived from the securing of this trade, and the increase of revenue from Customs duties would more than compensate for the loss of revenue from tolls, which was then estimated at from \$110,000 to \$115,000 at the outside. (See *Mirror of Parliament*, 11th May, 1860.)

This expedient has now been tried for three years; a period of sufficient length, it

might be supposed, to warrant an examination into its effect. Has it in reality increased the trade of the St. Lawrence in any material degree?

In proceeding to the consideration of this great and vitally important question, it is necessary, in the first place, to advert to the tariff of tolls heretofore established on the Provincial Canals; and, in doing so, it may be well to shew from official returns what is the actual cost to the Province of passing a vessel through these Canals. Assuming the trade of 1861 for a basis of calculation, it is found, by allowing interest at six per cent on the amount expended in their construction, and adding the outlay for repairs and management for that year, that it has cost \$72.80 to pass a vessel through the Welland, and \$45.06 through the St. Lawrence Canals, and if she passed through both, the cost was \$117.86. If no tolls are collected, this expense is borne by the people of this Province.

Otherwise, if the cost is calculated on the *tonnage* of property which passed through the Canals that year, it will amount to forty-eight cents per ton on the Welland, and fifty-six cents per ton on the St. Lawrence Canals, and \$1.04 per ton for both.

In order to meet this expense, the tolls established for purposes of revenue in 1850 upon the principal articles of commerce were at the rate of sixty cents per ton on the Welland, and thirty-seven and a half cents on the St. Lawrence Canals; but these rates were afterwards reduced, as shown by the table at page 9, until in 1859 they stood at twenty cents per ton on the Welland and twenty-two cents per ton on the St. Lawrence Canals.

The tariff was regulated by the Government, from time to time, upon the reports of the Commissioners of this Department.

Before submitting these reports, it was usual to consult the parties directly concerned in the trade, who were considered best qualified to advise concerning its interests.

In this way, the tariffs have been several times reduced, until they were ultimately fixed at so low a rate as to afford no real ground for complaint. They certainly could not be, nor were they, complained of as a burden upon the trade.

Taking the great staple articles of export—wheat and flour, it may be remarked that the toll in 1859 upon a bushel of wheat was only six-tenths of a cent, and upon a barrel of flour only 2.16 cents through the Welland Canal, and 0.66 cents per bushel and 2.376 cents per barrel on the St. Lawrence Canals. These rates collectively are about one quarter of the present established rates on the Erie Canal: in point of fact they were too light to influence the current of trade one way or the other.

In proof of this, it is only necessary to look at the evidence of the three years' experience during which these tolls have been abolished on the Provincial Canals, while at the same time the former rates on the Erie Canal have been continued or raised.

Leaving out of view the business done by the railways, and confining the attention to the great rival water communications between Lake Erie and tide water, but bearing in mind what has already been stated, that the ratio of increase of the Western trade—as measured by the traffic on both routes up to the year 1850, before railway competition began to affect it,—was twenty per cent per annum: it may now be seen what the actual progress has been since that period upon each of these rival routes. The following comparative statement, made up from official returns, gives the total amount of all kinds of property which has passed through the Erie, the Welland, and the St. Lawrence Canals every year for a period of thirteen years—from 1850 to 1862 inclusive, the gross revenues collected, and the average tariff of tolls established on each Canal each year during this period.

YEARS.	ERIE CANAL.			THE ST. LAWRENCE ROUTE.			Total Tolls by St. Lawrence Route.		AVERAGE TARIFF OF TOLLS IN EACH YEAR.		
	Tons.		Tolls.	Welland Canal.		Tolls.	Tons.	Tolls.	Erie Canal.	Welland Canal.	St. Lawrence Canal.
	Tons.	Tolls.	\$	Tons.	Tolls.	\$	Up.	Down.	Up and Down.	Up and Down.	
1860	3,076,617	3,273,899		399,400	151,704	\$	288,103	81,572	\$ cts.	\$ cts.	\$ cts.
1861	3,582,753	3,320,727		691,028	201,841		450,401	91,252	4 30	2 02	0 50
1862	3,863,441	3,116,244		745,060	233,094		492,976	88,077	4 40	2 19	0 45
1863	4,247,852	3,204,718		905,516	269,916		561,601	102,411	2 92	2 19	0 45
1864	4,165,862	2,773,566		767,210	208,304		639,000	110,110	2 92	2 19	0 45
1865	4,022,617	2,805,077		849,333	233,747		541,254	74,493	2 92	2 19	0 45
1866	4,116,082	2,748,203		976,556	272,050		634,536	85,536	2 92	2 19	0 45
1867	3,344,061	2,045,641		901,072	230,603		592,652	71,468	2 92	2 19	0 45
1868	3,665,192	2,110,754		855,112	222,377		605,558	104,273	1 46	1 46	0 30
1869	3,781,684	1,723,945		709,611	189,443		911,768	72,906	0 76	1 41	0 30
1860	4,650,214	3,009,597		944,084	194,673		733,596	90,766	1 40	1 41	0 02
1861	4,507,635	3,908,785		1,020,463	241,768		886,908	151,061	1 40	1 76	0 02
1862	5,598,755	5,186,943		1,152,082	292,694		756,370	146,954	1 40	1 76	0 02

* These are the Amounts, including Water Rents, Fines, &c., that would have been realised, if Tolls had been collected, as in 1860. The amount refunded or free by Order in Council, 26th May, 1860, on all the Provincial Canals, was..... For 1860..... \$127,540.43.
 1861..... 231,683.27.
 1862..... 284,841.08.
 Total..... \$646,044.98.

It is evident from a mere inspection of this table that none of these canals have, since 1850, preserved their former rates of increase up to that time. It is considered that the fluctuations in these returns must, in a great measure, be attributed to the effect of railway competition.

Taking first the decade from 1850 to 1859 inclusive, during which tolls were imposed on both lines, though the same policy of making periodical reductions in the tariff characterized both, it may be observed in regard to

1. THE ERIE CANAL.

The maximum of tonnage was reached on this canal in 1853, i. e. 4,247,852 tons, while the maximum of tolls received was reached in 1851: \$3,329,727. The tariff of tolls was lowest in 1859, and yet the trade that year had fallen off to 3,784,684 tons, and \$1,723,945 tolls,—showing conclusively that the reduction of the tariff did not augment the traffic on the canal.

2. THE WELLAND CANAL.

The maximum of both tonnage and tolls was reached in 1856: 976,556 tons, and \$272,050 tolls. The tariff on this canal was also lowest in 1859, and still the trade that year had fallen off to 709,611 tons, and \$139,443 tolls.

3. THE ST. LAWRENCE CANALS.

The maximum of tonnage was reached when the tariff was lowest—in 1859, i. e., 911,768 tons, but the maximum of tolls was, in 1854: \$110,110.

From other official returns showing the course of trade through the Provincial canals, it will be seen that in this period of ten years the purely American portion of it (i. e. "*from American to American ports*") which passed through the Welland Canal averaged fifty-one per cent of the whole, and the purely Canadian, through the St. Lawrence Canals, ("*from Canadian to Canadian ports*") was ninety-six per cent of the gross tonnage.

Taking next the three years since 1859 in which tolls have been abolished on the Provincial canals, while they have been doubled on the up freight of the Erie Canal in 1860, and increased twenty-five per cent on the down freight in 1861,—the most remarkable increase is found in the business of that canal which persists in collecting tolls. In 1862, it had reached the enormous amount of 5,598,785 tons, and \$5,188,943 tolls: shewing an increase of thirty-two per cent on tonnage, and fifty-six per cent on tolls, over the maximum of the former period.

On the other hand, the business on the Provincial canals in 1862 amounted only to 1,153,082 tons on the Welland Canal, and 756,870 tons on the St. Lawrence Canals,—shewing an increase of only eighteen per cent of tonnage on the Welland, and a falling off of seventeen per cent on the St. Lawrence Canals, from the maximum of the former period. In these three years the official returns shew that the American portion of the trade through the Welland, to and from Oswego and Ogdensburg, had increased to fifty-eight per cent of the gross tonnage, while the Canadian, through the St. Lawrence, remained at ninety-one per cent of the gross tonnage on the Canal,—the same as the average of the previous ten years.

In view of these statements, it cannot be assumed that the abolition of the tolls on the Provincial Canals has diverted any business from the Erie Canal. On the contrary, it has

ned to increase on that canal in a very remarkable manner, notwithstanding the very policy pursued in its management; while, on the other hand, the business on the St. Lawrence Canal in the third year of trial has not only failed to reach the same proportional increase, but has actually fallen off on the St. Lawrence, where, from the trade being more especially Canadian, a different result should have been produced, if exemption from tolls could have any influence in diverting the American trade into the same channel. In the attempt to divert trade by reducing tolls, we have the experience on the Erie Canal, preceding that of our own by about ten years. The result of this attempt is made known in the annual report of the auditor of the Canal department of the State of New York to the Legislature of that State, for the year 1861. In this report he says: "The reduction which took effect upon the business of 1846, was the result of an arrangement between the authorities of this State, Pennsylvania, and Ohio, after the completion of the canal in those States. The bonus paid in 1851, for the competition in the canal trade; and which has since been actively and successfully carried on, not for the benefit of trade within our own State, not to promote or develop a single interest within our borders, or to alleviate the burthens of our people,—and the consequent effort in 1852, to retain trade by a further reduction of tolls, are remarkable exhibitions of a mistaken policy, and of unwise and inconsiderate legislation." * * * "In another portion of the report, the auditor will shew by facts and figures, that although the State has lost revenue by the reduction in rates, it has not retained or secured a ton of traffic to the canal, in consequence of the reduction."

It is respectfully submitted whether these facts and statements do not show that the business of the internal trade is wholly uninfluenced by the imposition of tolls, so long as the trade is confined within the limits which have been charged on either of these routes for the last ten years; and—if this be admitted—whether it is not governed by other laws,—the same laws, in fact, as regulate both the internal and external trade: those of production and consumption, or of supply and demand.

If, then, it has been found impossible by this means to force the western trade into a channel leading only to a second rate-market on this continent, where it is met by ocean shipping which at once neutralize the superior advantages of our inland transport, it would seem to be a matter for consideration whether, in the present state of the public finances, it is expedient any longer to tax the Province for the benefit of this trade; or whether the trade which naturally seeks this channel and must continue to increase with the growth of the population of the country, should not be rendered immediately productive by the re-imposition of tolls.

The revenue which would be derived from the re-imposition of tolls would suffice in the space of a few years to make some of the important improvements in the navigation which have been in contemplation for many years past, and have only been postponed from financial considerations. Amongst the most essential of these contemplated improvements is the reconstruction of the locks and the deepening of the channel of the St. Lawrence Canals. In the general report of the Commissioner of this Department for 1861, much pains have been taken to furnish a correct and detailed description of the several Provincial canals, of their condition, dimensions, capacity, and present requirements; and with respect to the main channel of communication between the great lakes and the Atlantic, attention

was drawn pointedly to the fact that while the locks of the Welland Canal were smaller than those of the St. Lawrence, and could not therefore pass vessels of half the tonnage capacity of the latter, still the draught of water through the Welland was one foot greater than through the St. Lawrence, and, consequently, vessels which could pass through the former, drawing ten feet of water and laden with four hundred tons of freight, actually could not, without being lightened one foot—equivalent to one hundred tons of cargo, descend the St. Lawrence.

This anomalous condition of the navigation has for years proved a serious drawback to the trade of the St. Lawrence; so much so as frequently to induce transshipment at Kingston; and several river barges of large tonnage are being built this year, expressly with the view of carrying on this branch of the trade.

This transshipment can only be obviated by establishing a uniform scale of navigation throughout, the immediate adoption of which is urgently demanded by the rapid increase of the western trade, and becomes the more pressing from the periodical fluctuation of the waters of Lake Ontario and the river, which are now approaching their lowest levels.

The entrances to the Williamsburg and Cornwall Canals, especially, do not afford a sufficient volume of water for the satisfactory working of them during these low periods, unless the guard-gates are left entirely open, which greatly endangers the safety of the works.

Besides which, the continuance of strong easterly winds at such times, by retaining the water in Lake Ontario, lowers the river surface so much as to prevent the proper depth being maintained in these canals.

From the great natural advantages presented by the St. Lawrence as an outlet to sea for the products of the Western States, it is believed that the trade from these States through Canada must continue to increase.

It is, however, of paramount importance to foster its growth by affording every accommodation to vessels engaged in it, so that the route may be rendered thoroughly efficient and may ultimately become as firmly established and well known as other leading commercial lines on this continent, which have hitherto proved formidable rivals for the carrying trade of North Western produce, and have thus prevented the full realization of the object for which the canals were mainly constructed.

These competing routes, from their connection with the great commercial centres of New York and other Northern States (whose interests are closely allied to their success), must always attract a large portion of the trade. Nevertheless, it is believed that the present time is favorable for taking steps to fix a permanent line of traffic by way of the St. Lawrence; and, were this effected, means would, no doubt, ultimately accrue from the tolls by which the expenditure necessary for its full development would be defrayed.

With this important object in view, it is deemed necessary to again bring this subject prominently before Your Excellency.

The Chief Engineer, in 1859, estimated the cost of deepening the St. Lawrence Canals to 10½ feet depth of water on the mitre-sills of the Locks, at \$1,028,000. This does not, however, contemplate a lengthening of the Locks, which it would be desirable to undertake at the same time.

WELLAND CANAL

The navigation of this canal, which was opened on the 15th April, was successfully maintained throughout the season with only slight interruptions, caused by the shifting of lock gates, and repairs to bridges damaged by vessels, until its close on the 15th December.

The length of time during which the canal was kept open was materially prolonged by the judicious use of an ice-breaker in spring and fall. On the 6th December, the canal was temporarily closed by ice, which had formed in many places five inches in thickness; but the weather moderating, it was broken up by the ice-breaker, and several vessels which had been stopped were thus enabled to proceed upon their voyage.

REPAIRS AND MANAGEMENT.

The staunching of the Dunnville dam, referred to in the Report of last year as being then in progress, and which is necessary for preserving the supply of water at the summit, was completed this last year; too late, however, in the season to be of any use, or to afford an opportunity of testing its efficiency. Still, the best results are anticipated from it.

The other repairs during the past year have exceeded those of the previous year, as well as the estimate of the superintendent in charge, in consequence of its being necessary to perform several works which could not possibly have been foreseen:—such as scouring the mitre-sill of the Port Robinson lock which had sprung up; repairing damages by fire to the Port Dalhousie light-house; and repairing lock-gates and bridges injured by vessels. The ordinary and extraordinary repairs, having been duly authorized, were promptly executed by the superintendent, and the canal has thereby been placed and maintained in a very efficient state.

The cost of management remains about the same as in former years. The cost of repairs and management for the last five years is as follows:—

	1858.	1859.	1860.	1861.	1862.
Repairs.....	\$61,960.40	\$37,584.27	\$23,301.28	\$16,932.11	\$22,120.78
Management.....	42,559.23	40,988.89	43,011.32	39,807.98	39,129.49
Total.....	\$104,519.63	\$78,573.16	\$66,312.60	\$56,739.99	\$61,250.22

NEW WORKS.

The general state of the new works, which have been in progress for several years past for the purpose of ensuring an unfailing supply of water for the canal—by feeding it directly from Lake Erie, in the event of the possible failure of the present supply from Grand River,—having been fully described in the report of last year, it is only necessary here to state that the works now under contract for widening and deepening the Erie summit level have been steadily prosecuted; but, in consequence of the difficulty of disposing of the excavated material, the operations have been materially retarded. As this difficulty must continue, the appropriation required to carry on the works this year may be limited to \$30,000.

The banks of the canal generally, at all weak places, have been raised and strengthened, so as to maintain them in a condition of safety for the passage of deeply laden vessels; but in consequence of the continual wearing away of these banks from rains and the heavy

traffic on them, as well as from their settlement, a certain amount of expenditure will be requisite every year, to preserve them in a safe condition.

The Superintendent again urges the necessity of forming a second towing-path on the Thorold level, between Hurst's and Marlett's bridges, in order to prevent the frequent delays experienced by vessels in this part of the canal. The cost is estimated by him at \$18,100, and it is considered that the advantages to be derived from its construction would fully justify the outlay.

THE COST OF THE NEW WORKS IN 1862.

Widening and deepening canal, and raising banks.....	\$17,504.82
Salaries of Directing Engineer, Superintendent, and assistants.....	4,950.00
Total.....	<u>\$52,454.82</u>

THE REVENUE COLLECTED IN 1862.

Canal Tolls on vessels and property	\$284,737.10
Water Rents and Leases, (See Appendix B.)	7,863.90
Land Sales. (do).....	00.00
Fines and damages. (do).....	573.00
Total Revenue.....	<u>\$292,674.00</u>

A portion of the tolls collected amounting to \$85,235.30 has been refunded under the authority of the Order in Council of the 28th May, 1860.

The parties purchasing lands having failed to make payments according to agreement, it has been necessary to place their accounts in the hands of a solicitor for collection.

Some steps were taken by this Department in 1861, as stated in the report for that year, for the purpose of organizing a more efficient traction service for this canal, by the establishment of which it was confidently expected that greater despatch would be given to the vessels passing through it. But as they were met by the most strenuous opposition of the parties directly concerned in towing vessels, and by a memorial of the principal masters and owners of the vessels engaged in the trade, expressing their preference for the present system of towage, it did not seem expedient, under these circumstances, to persist in carrying out the plan.

It is still considered that this plan, if properly carried into effect, or some modification of it that would render it acceptable to the captains of vessels, would, without any additional expense either to the trade or to the Government, be productive of a very important change for the better, and very much increase the capacity and efficiency of this canal. But until its adoption is desired by the masters and owners of vessels, it does not seem advisable to take any further action in the matter, as, without their co-operation it could not be expected to obtain a fair trial.

WILLIAMSBURG CANALS.

These canals are constructed chiefly by cutting off points of the River St. Lawrence along its North shore, and enclosing large bays at the mouths of creeks and streams, and the embankments, by which this was effected, are exposed to the action of the rapid current outside; and from the great width of included water-surface at many places, they have suffered from the surf raised by high winds.

The inner face of the embankments having been left unprotected, it has been found necessary, in order to prevent serious damage to them from the causes described, as well as from the surge of steamers passing through the canals, to line their inner face with stone, and also to raise them and protect the most exposed portions on the side next the river. There are now about nine miles of the banks well secured, and it is desirable that this work should be continued, until the whole are similarly protected.

The works throughout were kept in an efficient state of repair during the season of navigation, which commenced on the 29th of April and closed on the 4th of December.

Two pairs of new Lock-gates were built and delivered last year, and one pair is under contract to be furnished next spring.

The water of the St. Lawrence having fallen affords a favorable opportunity of rebuilding the outer part of the pier at the upper entrance of the "Gallop's" Canal, so as to prevent accident to the works when the ice breaks up next spring.

The north pier at the upper entrance of Rapide du Plat Canal, being in an unsafe condition, must also be rebuilt now that the water is low.

It will also be necessary to repair the Guard-Booms which are in the Rock Cut on the Iroquois Canal.

These booms were built in 1852, to prevent vessels from being injured by striking against the points of rock which project from the sides of the cut. At the time of their construction, this canal had its upper outlet into the river; but its junction with the "Gallops" having been completed for several years, it is believed that the banks are sufficiently consolidated to permit of the water being drawn off with safety, when these sharp, angular points of rock might be removed. Were this done, the booms might either be entirely dispensed with, or made of much less width than they are at present.

The bridge at Lock No. 23, in the Village of Morrisburg, has been unserviceable for several years past.

The inconvenience arising from this cause has been more severely felt than usual during the latter part of last season, as a great number of vessels passing the canals were towed by horses which had to be taken across the canal on floats.

This mode of towage being less injurious to the banks than that by steam-tugs, it is proposed to give facilities for it, in future, by the reconstruction of the bridge.

The action of the water on the banks, previous to their having been lined with stone, had run deeply into them at many places, and the material thus removed has been deposited in the prism of the canal, and this, together with slides, prevents vessels of the ordinary draught from passing at low water. This is especially the case in the "Gallops" and Rapide du Plat sections. To remove bars thus formed, a dredging-machine will be employed next summer.

CORNWALL CANAL.

The water was drawn off this canal in April, for the purpose of clearing out bars, and effecting other light but necessary repairs.

It was again raised to navigable height by the 1st of May, and continued in good condition until the 8th December, when it was closed for the season.

The embankments having settled, and the slope walls being disturbed at many places along the line, the necessary repairs to these, together with clearing out the side-ditches, culverts, &c., formed the principal works of maintenance done during the past year, with the exception of the rebuilding of a culvert-bridge over a creek connected with the Canal, on the line of the road in front of the Township of Cornwall, which had been carried away by the freshets of last spring.

Two pairs of new lock-gates were built and delivered during the season, and three pairs are under contract to be furnished next spring, which, together with the spare gates on hand are believed to be sufficient to meet ordinary casualties for several years.

The work of raising some of the embankments and their protection with stone must be continued next season. For this purpose 200 cords of field-stone will be required, which, together with 40 snubbing-posts, should be provided this winter. Cost \$480.

At several prominent points, and in some of the sudden bends in the upper reach of this Canal, large banks of silt and deposit have accumulated to such an extent as, in case of low water, to retard considerably the passage of deeply laden vessels.

These bars it is proposed to remove by a dredge during the season of navigation, as a more economical mode of effecting the object than by hand-labor in the spring, when there is so much ice and water to contend with.

The wharf at the upper entrance, referred to in the last report of this department as being in a ruinous condition, has not yet been repaired. But its importance as a mooring pier, affording the means of safety to vessels at the head of the rapids, renders it desirable that the work should be proceeded with next season. It is estimated to cost \$5,238.—The superstructure of the wharf at the lower entrance, and of that adjoining the town of Cornwall, should also be rebuilt; the cost of which would be about \$1,500.

In the first leases granted for water-power on this canal, it was provided that the lessees should construct and maintain the head-gates to their mills. They built them at first in a temporary manner, and have since failed to keep them in proper repair.

The navigation having been interrupted for six hours, in June last, from this cause, it will be necessary to compel these parties immediately to comply with the conditions above referred to.

The water-power leased on the north side of this canal, for which the Department constructed head-gates, still continues to be used only in part.

The fines and damages collected by order of the Superintendent during the past year, amount to \$119.25.

For details see appendix C.

BEAUHARNOIS CANAL.

The ice takes sooner, and remains longer in the stillwater Bay, at the head of this canal, than at the upper entrance of any other on the St. Lawrence.

The water was, however, drawn off on the 16th of April last, for the purpose of effecting repairs; and the canal was again filled by the 30th of the same month. The season lasted from the latter date until 30th November, during which period no interruption occurred to the passage of vessels.

In April last, when the ground was covered to a considerable depth with snow, a sudden thaw took place, which raised the waters of the St. Francis higher than they have been previously recorded by this department.

This had the effect of flooding large tracts of land in its vicinity, and caused several slight breaches in the dyke through Hungry Bay; but as the extreme high water lasted only for a few days, little actual damage resulted from it.

The lowest and most exposed parts of the dyke have been raised and protected, but it will require some further repairs next spring.

The dams at the head of the canal and the banks above the guard-lock, together with that west of the main dam, have been raised and protected, to prevent accident from a recurrence of high water in the lake.

The works, generally, have been maintained with less outlay than in previous years; but the ditches, from the unusual depth of snow last winter, required much greater attention and expense than usual.

The embankments at several places, and especially at some of the regulating-weirs, have been raised, strengthened, and protected.

The swing-bridges, where necessary, have been repaired; and a pair of lock-gates damaged in October, 1861, have been rebuilt.

Two pairs of new lock gates were delivered last fall: making three full sets of spare gates on hand and ready for use, besides three pairs under contract, which are to be delivered next spring.

The insufficient accommodation at the outlet of this canal has been severely felt for the past few years, as a large number of vessels frequently collect there, waiting for tug boats or favorable winds. At such times, one or more steamers with vessels in tow have occasionally arrived when there is really no place for them to make fast to.

This causes much inconvenience and not unfrequently leads to serious delay; a remedy for which can readily be provided by extending the south pier about 300 feet outwards. This would cost about \$7,000.

During the past year, fines and damages were collected, by order of the Superintendent, to the amount of \$254.42. For details see appendix C.

LACHINE CANAL.

The enlargement of the "Rock Cut" on the upper reach of this canal, frequently referred to in previous reports of this Department, was fully completed by the opening of navigation last spring.

It is now one hundred feet in width, and generally of the full depth

The sides of the cut above the rock are well protected by walls, and the obstructions to safe navigation, heretofore existing at this point, are now effectually removed.

The prosecution of the work was attended with much difficulty, owing to the great quantity of water and heavy falls of snow which had to be contended with. Nevertheless, the whole was conducted in a manner alike creditable to the local officer and to the contractors. A regulating-weir and raceway at Lock No. 4 were also constructed last spring under similar circumstances. These had to be brought into use immediately after the walls were built, and the mortar having had no time to harden, has, to some extent, been washed out of the south wall of the race by the cross currents below the weir. This will have to be re-pointed next spring, and the walls sheeted with plank, as has been already done on the north side.

These works have been highly beneficial to navigation:—the first by diminishing the current, and the second by affording the means of regulating the water.

The cause of the delays at Lock No. 4, so severely felt during the season of 1861, have thus been lessened.

These improvements have been undertaken solely for the benefit of the navigation, which has been, and still is, so much interfered with by the excessive quantity of water drawn off for mills, that it is absolutely necessary they should be confined to that object and, as stated in the last Annual Report, their construction should "form no pretext for the present inordinate consumption of water for milling purposes, still less for increasing it."

A dredging-machine was employed during the season in removing silt and deposit from the canal and basins, and can with advantage be similarly engaged for part of the next season. The dredge is in good repair, but the scows require new decks.

The Lachine and Wellington Street bridges were thoroughly repaired last winter; and the bridge above lock No. 2 must be overhauled as soon as the ice affords a safe means of crossing the canal.

The walls of lock No. 2 have been pointed, and part of the north wing of lock No. 4 was rebuilt last spring. The dock-wall in front of the mills on the south side of basin No. 2, was well grouted and pointed, which checked a portion of the leakage through it.

The banks, slope-walls, wharves, flour-sheds, and booms at Lachine were repaired, and such other matters attended to as were necessary to keep the works in a serviceable condition throughout the season.

The water was let into the canal on the 4th May, but the removal of the coffer-dams at Lachine and the adjusting of the sluice-gates of the new weir at Lock No. 4 prevented the water from being raised to full head until the 7th May. From this date to the close of the season on the 6th December, the navigation suffered no interruption, except for about two and a half days in May, at Lock No. 2, whilst removing a gate which had failed, and supplying its place with another.

The principal repairs required this year, other than those above referred to, are, re-planking and repairing bridges, wharves, and flour-sheds; repairs to lock-walls, mitre-sills, gates, and regulating-weirs; general repairs to banks and slope-walls; furnishing mooring-posts, and building gates for one of the old locks used as a graving-dock. All which are estimated to cost \$10,540.

There are at present $5\frac{1}{2}$ pairs of spare lock-gates ready for use on this canal ; and one pair of lower gates for locks Nos. 1 or 2, under contract, to be delivered next spring.

It is, however, desirable that another pair of spare gates should be provided for the guard lock, as those on hand for that purpose are merely old gates repaired.

The great and frequently irregular quantity of water drawn off for the mills at the St. Gabriel Lock has rendered it very difficult to maintain the levels at a uniform height. To obviate this, the construction of a regulating weir is deemed indispensable. Plans and specifications for this work were prepared, and tenders received for it in the fall of 1861 ; but the sum applicable to that purpose being insufficient, it was not then proceeded with.

A due regard to the interests of the navigation, however, renders it imperative that this work should be undertaken ; and it is submitted whether a sum should not be embraced in the estimates to meet the necessary outlay.

It is daily becoming more apparent that the Wellington street bridge is quite inadequate to meet the wants of the traffic between Point St. Charles and the city of Montreal, and that another bridge must be constructed.

It is believed that this can be done most cheaply, and with the least inconvenience to the navigation by placing the new bridge immediately above Lock No. 3 ; where, in addition to its relieving the lower bridge, it would prove a great accommodation to the manufacturing establishments at St. Gabriel and to the inhabitants of the west end of the city.

The wharfage accommodation of the lower outlet of this canal has been found for a number of years past insufficient to meet the wants of the trade. During busy seasons, vessels have frequently been detained several days at a time before they could get alongside of a wharf. This has been often referred to in the reports of this Department, but it has never been felt to such an extent as during the last two seasons.

The officer in charge of the canal reports that "in some instances" (believed to be not unfrequent) "vessels loaded with grain from the West are kept beating about the canal and harbor, waiting for arrangements to be made for discharging them, longer than it requires the Montreal Ocean Steamship Company to discharge and load one of their large vessels."

If it is an object of the importance which it has always been considered, not only to retain the existing trade, but to attract as much more as possible, it is evidently as necessary to provide facilities for expeditious transshipment, as the means of cheap and speedy transport.

By the enlargement of the St. Gabriel Basin on the scale for which plans have been prepared, and towards which an appropriation was made in 1860, a large and important portion of the trade would be accommodated.

This would afford fully 3,000 lineal feet additional wharfage, where 20 inland vessels of the ordinary class could lie at one time ; and there would be ample space on Government property for the erection of grain and flour stores, or such other buildings as might be required.

It would also admit of a larger class of vessels being brought into the canal, by supplying berths for those of lighter draught, which generally occupy the basin between locks 1 and 2, where there is a depth of fully 16 feet. The cost of this work is estimated at \$108,163.

\$102.34

There yet, however, remains to provide the necessary accommodation for the larger class of vessels, to pass which, locks Nos. 1 and 2 were designed.

With this object in view, the Government purchased, in 1853, a large tract of land, which still remains unoccupied and unproductive.

It has been long contemplated by this department to bring a large portion of this land into use by the construction of two new deep-water basins, in lines parallel to the south dock-wall of Basin No. 2, and extending westwards to St. Etienne Street from the upper part of the basin referred to.

It is proposed to make these basins of considerable width, with a sufficient space between and alongside of them for the erection of warehouses, elevators, &c., and for railway tracks to connect with Point St. Charles.

The present main basin to be enlarged by cutting off the angular piece of land which projects in front of the mills.

Both this and the new basins to have 17 feet water throughout.

The cost of one of these basins (basin A) docked with solid crib work, and adapted for the reception of sea-going vessels, with seventeen feet of water, and with a channel of the same depth for access to it through Basin No., 2., is estimated at \$140,360; and it will afford eighteen berths for vessels.

The cost of the second basin (Basin B), constructed in the same manner and for the same depth of water, is estimated at \$124,419; and it will furnish sixteen additional berths for vessels.

These improvements are urgently called for, to admit of large vessels being brought alongside of warehouses, where they can be speedily loaded, and for the purpose of effecting a rapid transfer of grain and produce from the smaller craft to them.

Besides affording relief to the business now over-crowding Basin No. 2, the opening of these new basins will render the Government land adjacent to them very valuable; so much so as to create an immediate demand for building lots for the erection of elevators and warehouses; and it is believed that the sale of it will not only defray their cost, but leave a large surplus available for other purposes.

It is obvious that the existing impediments to this trade (for which there is so much competition) must be greatly augmented by its increase, and that unless they are speedily and effectually removed they will have the tendency of driving the grain export into other channels.

It is therefore submitted whether provision should not be made for the construction of one at least of these basins, and that Basin A, being the most necessary, should be first proceeded with.

The following amounts have been collected on this canal during the past year, viz:—

For fines and damages, by order of Superintendent.....		\$ 392.50	
Sale of old barge.....		18 50	
			\$ 411 00
Dues on fire-wood at Montreal.....		1374 84	
plan. Do do at Lachine.....		321 78	
sills, g			1696.62
mooring			
of which	Forward		\$2107.62

Brought forward.....	2107.62
Dues on Timber in Lachine Basin.....	1345.53
Do lock at Montreal, used as a graving Dock.....	630.25
Do vessels wintering in Canal.....	488.00
Do for use of Flour Sheds.....	3434.32
Do on vessels entering canals from Lower Ports.....	1408.18
Water rents and leases.....	9810.25
Total.....	\$ 19,224.15
Tolls for 1862, if collected, would have amounted to.....	\$137,520.88
Total.....	\$156,745.03

CHAMBLY CANAL.

The heavy snows and sudden thaws of last winter, together with the great height of the Richelieu river in March and April last, greatly endangered the banks of this canal. Several breaches were made in them, and a large quantity of clay and sand was brought down by creeks and ditches, and deposited in the channel. To remove this and the slides that had occurred, it was necessary to construct cofferdams at the ends of the bars, for the purpose of getting the work unwatered.

Four miles of the channel-way had to be thus cleared out before navigation was opened. This, being both tedious and expensive, has considerably increased the outlay for the past year.

The work of protecting the banks with stone was also proceeded with last season.

Two pairs of lock-gates were built last winter, and it will be necessary to construct two other pairs this winter.

The landing-pier at Chambly and several of the road and towing-path bridges have been repaired.

These latter works were performed principally by the Lock and Bridge keepers, under the direction of the Superintendent.

The canal was opened on the 6th of May, and continued in a navigable state until the 1st of November, when a breach occurred in one of the banks, which it took six days to repair. After the 16th November, vessels experienced much difficulty in passing through the ice, but the canal was kept open until the 4th day of December.

The locks are generally in a much better condition than they were a few years ago; but the upper wing and recess walls of Locks Nos. 1 and 7 will soon have to be rebuilt.

The chief matters to be attended to this year are: cleaning out prism of canal; protecting banks with stone; renewal and repairs of lock gates; repairs to bridges and wharves;—all of which are estimated to cost \$7,440. There has been collected, last season, for fines and damages by order of the Superintendent..... \$69.70
And for dues on wood, &c.,..... 32.64

Total.....\$102.34

ST. OURS LOCK AND DAM.

The great height of the River Richelieu, when partly sheeted with ice in April last, led to some apprehension that these works might be considerably damaged; but the well-directed efforts of the Superintendent happily prevented such a result.

The damages, which were comparatively light, were all made good, and the works strengthened and protected during the past season; but a thorough examination of the dam having been made at low water, it appears that about 200 toises of stone are still required to secure the centre portion of it.

The lock-gates, above the water surface, must be painted, and some of the piers repaired. These works are estimated to cost \$2,800.

Navigation at this place was open on the 25th of April, and continued without interruption until the 2nd December, except for a few hours, while adjusting the lock gates.

ST. ANNE'S LOCK AND DAM.

During the freshet of last spring these works suffered considerably, about 30 feet of the upper guide-pier above the lock, and 150 feet of the upper part of the long dam having been carried away. The superstructure of the guide-piers, situated about a mile below the lock, was also displaced. These have been thoroughly repaired, and the wing-dam below the lock raised. An opening has been made by which barges and small steamers can pass in rear of the long pier, and thereby avoid the strong currents at periods of high water.

There still remain about 200 feet of the pier above the lock to be repaired, and the face of it to be sheeted with elm or tamarack plank. These and other slight but necessary repairs are estimated to cost \$900.

Navigation at this point was opened on the 29th of April, and closed for the season on the 2nd of December.

CARILLON AND GRENVILLE CANALS.

These Canals were opened for the passage of vessels on the third day of May, and closed on the 30th day of November.

As heretofore, the repairs during the season were confined to such works as were indispensable to the maintenance of the navigation.

They consisted chiefly of repairs to the lock and sluice gates; removing the deposit from the bottom of cuts; making a passing-place above Lock No. 10; deepening the entrance at Grenville, and raising the towing-path on that section of canal; and rebuilding the dam across the North River.

The maintenance of this dam costs annually about \$200, a large portion of which might be saved, and the Carillon section of canal better supplied with water, by building a more permanent structure.

The pier at the upper entrance of the Grenville Canal is in a very decayed state. The superstructure must be rebuilt during next summer.

These works, together with general repairs for the season, are estimated to cost \$4,100.

The lock gates, to which reference was made in the last report of this Department, must be provided as early as possible, viz :—" One set for the Carillon Canal ; one set for the large, and one for the small locks on the Grenville Canal."

The works generally are in an unsatisfactory condition, and nothing short of a thorough overhauling of them could be of permanent benefit. From the irregular dimensions of the locks, it would, however, be unadvisable to incur any great outlay in renewing or repairing them, until a uniform scale is fixed for the Ottawa navigation.

The sum of \$107.06 was collected for dues on firewood piled on canal property during the past year.

RIDEAU CANAL.

With the exception of about four miles at the lower outlet, the line of this canal follows the old bed of the Rideau for nearly the whole distance between Ottawa and the summit level.

The drainage area of this river is very large, and the system of improvement adopted being that of securing the required draught by the construction of dams which generally back up the water over a great surface, the works are peculiarly liable to accident from floods.

A sudden thaw, which took place in April last, when the ground was covered to a considerable depth with snow, threatened the most serious consequences ; and the probability of damage was increased by the simultaneous failure of several private dams which were erected for mills on the the higher levels of the tributary streams, thus precipitating large bodies of water into the main valley, which was already overflowed by the discharge in its immediate vicinity.

The summit level, or Rideau Lake, had, however, been fortunately drawn down lower than usual, previous to the flood in question ; and although it rose three feet in one week over an area of about 60 square miles, means were available to prevent this immense body of water from entering the river,—thus cutting off at the head what would have doubtless proved an uncontrollable source of damage to the lower works. Notwithstanding every precaution that could then be adopted, several of the works met with serious damage, the extent of which increased as the river descended, the greatest being at Hog's Back, where the line of canal leaves the channel of the Rideau. At this point a dam nearly 50 feet high was originally constructed, consisting of a narrow line of crib-work, backed up by embankments of earth and stone, connected with which no suitable provision had been made to control such a large volume of water as this freshet produced.

This resulted in the destruction of a large portion of the dam ; and from the direction taken by the water which escaped through the breach into a sudden bend of the old river bed, a large portion of the embankment below the locks was also carried away. In reconstructing these works, advantage was taken of a shelving bed of rock, on which a bulk-head was constructed, capable of controlling the river at its greatest height. Along the north edge of its apron a flat dam was built, to give a new direction to the current below, and to prevent a recurrence of the injury to the canal embankment.

The new works at this place being of considerable extent prevented the lower portion of the canal route being opened until the 1st September. They cost \$29,482.48.

The dam at Black Rapids failed several years ago; but it was subsequently repaired by connecting wooden frame-work with the original stone structure. This was always found difficult and expensive to maintain, and during the freshet above referred to, the wood-work was entirely destroyed.

The dam being low, and the bed of the river at that place a flat ledge of rock, it was decided as the best and most economical plan to construct a new wooden "flat pressure" dam immediately below the old structure. This cost \$5,081.09. The temporary guard-dam, constructed in the east channel of the river near the head of Long Island being insufficient to stand the pressure of the ice brought down by the current, the central pier was upset at the time of the freshet, and allowed the main body of water to pass through that channel, which greatly endangered the safety of the works at the foot of the Island.

It is proposed to rebuild this dam in a more substantial manner, so as to throw the water chiefly into the west channel. At other places the works suffered slight damages from the cause above stated; all of which have been repaired.

The rebuilding of several important structures and the thorough repair of others within the past few years, have placed the works generally in a better condition than when they were transferred to the Province.

In view of the large annual expenditure in maintaining this line of navigation, it would seem but reasonable that the trade which this canal has created and fosters should be made to bear at least some portion of the expense of keeping up its works. It is believed that the tariff of 1859 could be reimposed without the slightest injury to this trade, and that the revenue to be derived from this source would, in a few years, render the canal self-sustaining.

During the last season, three pairs of new lock-gates were built and brought into use, and this winter two pairs will be provided.

On the 1st day of May, the Canal was open from Smith's Falls to Kingston, and from the 1st September it was navigable throughout until the 26th day of November.

The repairs required this year, although extending to all the stations, are principally confined to the gates and working machinery, and the renewal of those portions of the wood-work which are now in a decayed state. All of which are estimated to cost \$5,541.00.

Total cost of repairs for 1862.....	\$43,836.15
Maintenance.....	17,290.75
	<hr/>
Total.....	\$61,126.90

BURLINGTON BAY CANAL.

The very extensive repairs and improvements which have been effected in this canal within the last few years have served to place it in such good order generally, that no expenditure whatever upon the works has been necessary during the past year. The sum of

\$1,700 was expended in making repairs to and furnishing the ferry scow, which had received damage from a vessel passing through the canal.

The repairs required at the ferry recess and landings, for which an estimate amounting to \$1,700, to include casualties, was submitted in the previous report, have not been proceeded with, on account of the water being too high to admit of it being satisfactorily accomplished.

INLAND NAVIGATION—NEWCASTLE DISTRICT.

The works under this head which continue to be maintained by the Government are, with the following exceptions, in as good condition as the limited extent of the navigation seems to warrant.

Buckhorn Dam requires to be further staunched with gravel, and a wall at the South end of it should be partly rebuilt.

During last season, several of the works at Bobcaygeon were overhauled and repaired; the sides of the upper cuts were made good, and guard-piers built above and below the lock. The dam still requires to be gravelled to prevent leakage.

The lock-gates are so extremely difficult to work as to lead to the supposition that the bolts have either settled unequally, or that the segment upon which the toe of the gates revolves has been disturbed from some other cause, which will necessitate the water being pumped out of the lock, in order to remove the difficulty.

However this may be, the gates are likely to sustain serious injury, unless placed in better working order.

This, together with other matters at this place which require attention, will be looked to early next season.

The dam at Lindsay also requires staunching and repairs, and the old lock there, now converted into a slide, should be overhauled, as at present it is unsafe, and presents a most dangerous appearance.

When these works are repaired, it will be a matter for consideration whether they should not be then handed over to the parties most interested in their preservation.

The permanent bridge in the line of Lindsay Street will be placed under contract early next spring, so that the abutments and piers can be built during the season of low water; but the formation of its approaches will be left to the Municipality, after a fair value is fixed for the actual work to be done.

Repairs for 1862,.....	\$742.83
Management	736.06
Total.....	<u>\$1478.89</u>

PICTON HARBOUR.

After the dredging-machine and dumping-scows had been put in good working order in spring, the formation of the channel leading up to the wharves in town was resumed, the work steadily prosecuted to completion.

It was at first intended to make this channel, uniformly, one hundred feet in width throughout; but on the representation of the Municipal Corporation of the town, and other parties interested in the prosperity of the county, it was considered advisable to deepen the coves on either side of the channel, so that vessels could turn about in the harbor, and not be under the necessity of backing out.

The dredging operations were therefore continued until the 17th of October, when the channel had been widened to one hundred and forty feet, and a basin excavated on the west side of the harbour, affording all the accommodation at present required.

The dredge and scows have been laid up in safety at this place, and are available for like service elsewhere, whenever they are required.

The expenditure for 1862 has been \$5,193.84.

NORTH RIVER.

The clearing out of a channel through the shoal below the village of St. Andrews, so as to admit of vessels of light draught ascending at all seasons to the village, was undertaken and completed by this Department in 1861.

Upon a representation from certain ship-owners and others interested in the navigation of this river, stating that vessels had grounded in the improved channel, and praying that the obstructions might be removed, an engineer of this Department was directed to examine the channel, and report upon the sufficiency of the previous operations, and the necessity for further expenditure.

From his report, it appears that some vessels, by not keeping the *improved channel*, had grounded in the *old one*, while the steamer St. Andrew, under better pilotage, made her regular trips throughout the season.

He also reported that, owing to the rocky formation of the shoals, any more extended improvement would be of a very expensive nature, requiring blasting under water and the services of a diver. The present channel is considered sufficient for the ordinary wants of the trade on this river, and, properly buoyed out, can be safely used. It is considered that this trifling service properly devolves upon the parties directly concerned in this trade.

LAKE ST. PETER.

The formation of a ship channel through this lake was first undertaken by the Government as a *public work*. After an expenditure of £73,558 15s. 5d. in providing an outfit, and prosecuting the works for four seasons—1844, '45, '46, '47, the steamers, dredging-vessels, machinery, tools, and implements, constructed or acquired for effecting the improvement, were made over to the Montreal Harbor Commissioners by the Act of 1859, for the purpose of enabling them to deepen the channel through the lake to sixteen feet draught at low water, "in such manner, direction, and place as the Commissioners should deem best."

By the same Act, the Commissioners were authorized to raise a sum of £30,000 on the credit of the improvement; the interest on which was to be paid out of a tonnage duty to

be levied on all vessels navigating the improved channel, drawing more than ten feet of water.

In 1852, the Harbor Commissioners received authority, under the Act 16 Vic., Cap. 34, to raise a further sum of £40,000, and in 1855, by the Act 18 Vic., Cap. 143, a still further sum of £100,000, and they were authorized to open the channel twenty feet in depth between Montreal and Quebec.

Under these several Acts, the Harbor Commissioners issued their debentures to the full amount authorized, namely..... £170,000

This debt has since been assumed by the Government, under the Order in Council of the 18th April, 1861; and the Harbor Commissioners have also received the whole amount of the appropriation of 1860: 23 Vic., Cap. 64..... £ 16,000

Making in all..... £186,000

In 1861, a further appropriation of £15,000 was granted for carrying on the works in Lake St. Peter, but no part of this has, as yet, been paid over to the Harbor Commissioners.

With the money raised under these several Acts of the Legislature, the Harbor Commissioners succeeded in clearing a channel of three hundred feet in width, and twenty feet in depth at low water, between Montreal and the lake, through the natural obstructions presented at Point aux Trembles, Verchères, and Lavaltrie.

In the lake, they have dredged a channel eleven and a half miles in length, and from two hundred and fifty to three hundred and fifty feet in width, with a clear draught through it of seventeen feet three inches at the period of ordinary low water of eleven feet upon the "flats," according to their Engineer's survey of last year, but of eighteen feet according to that of Commander Orlebar, R. N. One of the Commissioners states that it has been satisfactorily tested by the passage of hundreds of vessels through it, drawing eighteen feet of water, when there was only eleven feet upon the "flats."

In bringing about this important result, the Harbor Commissioners, at the close of the year 1861, had excavated, according to their Engineer's measurement, 3,144,037 cubic yards of clay out of this channel in the lake, at a cost of \$455,707 exclusive of outfit—being at the rate of about fourteen and a half cents per cubic yard, and, by the estimate of that officer, there still remained 1,021,022 cubic yards to be removed, before an uniform channel of three hundred feet in width and twenty feet in depth at low water, could be obtained. This would cost, at the rate of the work already performed, about \$147,946; but the Engineer states that fifteen per cent must be added for dressing up and straightening the channel, and that the cost will amount to \$170,138.

Some other important improvements have been effected below the lake, as far down the river as Cap à la Roche, beyond which the operations have not extended. It would appear, however, that some obstructions have yet to be removed from this portion of the St. Lawrence, in order to obtain the full draught of twenty feet at low water.

The operations were not resumed in the lake, last year, until the 2nd August, for two reasons: first, by an Order in Council of the 17th April, 1862, the work were ordered to be suspended, until a survey should be made under this Department; and, secondly, by the gales and premature breaking up of the River Richelieu, the dredges, steamers, and scows,

which had been laid up at Sorel for the winter, were caught in an ice jam, many of them sunk in deep water, and others seriously damaged. (See the report of the Superintendent, appendix J.) The best part of the season was spent in searching for and recovering this property, and in making the necessary repairs, which were attended with a great deal of delay and expense.

Authority of Council was obtained on the 21st of July last, for resuming the work under the direction of the Montreal Harbor Commissioners, as heretofore, but subject to such visits and examinations by an Engineer of this Department as might appear necessary.

It will be seen by the report of the Superintendent in charge of the dredging operations in the lake for the past year, that dredge No. 3 was set to work on the 2nd August, and dredge No. 2 on the 8th September, and that both continued working until the 26th November; in which time they had, together, removed 3,137 scow loads, which, at seventy cubic yards per load, according to his estimate, would give 219,590 cubic yards removed from the channel last year. This was all done in bringing up the twenty foot draught.— It has been ascertained, however, by measurements made in excavation by Mr. T. C. Keefer, in 1854, that there is an excess of measurement “in spoil” of forty per cent, or that fifty cubic yards “in excavation” will measure seventy cubic yards on the scows; and, by this well established ratio, it would appear that the actual quantity removed in 1862 did not exceed $3,137 \times 50 = 156,850$ cubic yards.

The expenditure appertaining to this work during the time the dredges were employed on the lake, exclusive of the ordinary and extraordinary repairs of last spring, are reported to be \$17,948.89, which would make the net cost of dredging about eleven and a half cents per cubic yard measured in excavation.

The total quantity of excavation which remained to be removed from the channel at the end of 1861, according to the Engineer's survey, before referred to, was..... 1,021,022 cub. yds.
Deduct quantity removed in 1862..... 156,850 “

Leaving..... 864,172 cub. yds.

yet to be taken out, in order to complete the channel through the lake to an uniform width of three hundred feet, and twenty feet in depth at the period of low water.

RIVER WORKS.

OTTAWA WORKS.

The great value and importance of the public works on the Ottawa, and its tributaries, now under the charge of this Department, will be seen by the large quantity of the products of the forest, which has passed through them during the last year.

From the Upper Ottawa 326,781 pieces of square timber passed the Chaudière Slides in 1862, and about 90,000 saw logs arrived at that station the same year. From the Ge-

Gatineau River, 9251 pieces of square timber and 154,918 saw logs have been brought down. The tolls on all this property have amounted to \$49,000.

All the works under the management of this Department were thoroughly repaired during the last winter, and after the passing of all this lumber, the Superintendent reports that they are still in comparatively good condition, and that a moderate outlay during this winter will suffice to place them in good working order for the business of the coming spring.

A detailed statement and estimate of these repairs, as called for at the several stations will be found in the report of the Superintendent, (See Appendix E.) They are estimated to cost \$4234.75 and, under Your Excellency's authority, the Superintendent has received instructions to proceed with them during the period of low water this winter.

The cost of repairs and management for the last two years is as follows :

Charged to revenue in	1861.	1862.
Repairs.....	\$ 8,331 48	\$ 4,856.46
Management	10,677.19	10,895.89
	<hr/>	<hr/>
	\$19,008.67	\$15,752.35

RIVER DU MOINE.—The improvement of this tributary as a public work to facilitate the descent of the timber made upon it, was prayed for in September, 1861, by certain parties engaged in the lumber trade of the Ottawa. Their memorial was strongly supported by several members representing the interest of the Ottawa Districts in both branches of the Legislature.

Upon its receipt, the Superintendent of Ottawa Works was instructed to make an examination of this river. He reported, in October of the same year, that he had ascended as far as the head of the Long Rapids, forty-five miles above its confluence with the Ottawa. He described the various kinds of improvements necessary in this distance, at seventeen different places, which he estimated to cost \$8,850; and stated that their effect would be to open eighty miles of that river, which he was credibly informed was well stocked with valuable timber; and he therefore recommended that the improvements should be made by the Department, and that ten per cent of the outlay should be charged annually as tolls.

While it is necessary to guard against the waste of the public funds by embarking in improvements on the remote and smaller tributaries, on which the limited supply of timber must soon be exhausted, and render the works useless,—it has nevertheless proved of advantage to the lumber trade, as well as to the public revenue, to make the necessary improvements on the larger ones, such as the Gatineau, Madawaska, and Petewawa. In proportion as the older limits have been long lumbered upon, and the nearer supplies diminished, the lumbermen push their operations up more remote rivers, and it is only in this way that they have ascertained, beyond question, the permanence and excellence of the supply and that the expediency of improving such rivers, as public works, is made manifest.

Such appears to be the case with the Du Moine. Taking its rise amongst the great northern lakes, it flows in a southerly direction, and enters the Ottawa about one hundred and forty miles above Ottawa City. As well from its large drainage area as from the abundance of good timber reported upon it, it may properly be classed amongst the

larger tributaries before referred to, and be considered worthy of a corresponding extent of public improvement.

Authority of Council having been obtained for proceeding with these improvements on the condition before mentioned—of ten per cent of their cost being annually imposed as a toll on the timber coming out of this river—the parties interested in the trade, in order to save time and reap the benefit of the improvement this year, have undertaken to perform the work at the Superintendent's estimate and under his direction, trusting to their being reimbursed if the estimate is voted by Parliament. According to last reports, the works are now well advanced, and will be available to the trade on the breaking up of the river in spring.

NEW WORKS.—The improvements required for extending the lumbering operations on the upper part of the Petewawa River, between Lake Traverse and Trout Lake, for which an appropriation was made last year, and which had been undertaken by the parties engaged in lumbering on that river in 1861, consist of a dam and a long slide, with a guide-boom and supporting pier, at the Cascades or High Falls, and of side dams, glance-piers, and retaining-boom, at the upper end of Lake Traverse.

These have been completed under the direction of the Superintendent, and have been received and paid for as public works, on the understanding that a toll should be levied on the lumber produced on that river to repay the outlay, which amounted to \$13,646 57

This expenditure was fully warranted by the large quantity of valuable timber found upon the "limits" granted on this tributary, which affords a fair prospect for the lumbering business upon it for many years to come.

A toll of one dollar for every crib of timber passing these works has been established under the authority of an Order in Council of the 30th August, 1862, for the repayment of the expenditure on their construction.

The Hull slide and the bridge over it have also been rebuilt, and of the several works embraced in the estimate of \$21,334.75, referred to in the general report of last year, the principal part being such as were essential to the proper maintenance of the navigation, were proceeded with and completed during the past year, in a satisfactory manner

On the Madawaska River, at Chain rapids Station, two new supporting-piers for the retaining boom were built, and at the foot of the long slide at the High Falls Station, a supporting-pier and glance-boom were constructed.

The dam at the first Chute of the Petewawa River has been re-constructed ; also the lower slide at Calumet Station on the Ottawa. The slide at Mountain Station has been lengthened, the works at Joachim Station strengthened, and portions of the side piers of the South and Chaudière slide rebuilt, as also the bridge over the Gatineau Canal

These being all either works of re-construction or new works, have been classed under the head of *new works*

The expenditure upon new works during the year 1862, including that already referred to on the Petewawa River, is as follows :

On the main Ottawa River	\$16,753.19
Petewawa.....	18,369.40
Madawaska.	5,391.58
Gatineau.....	1,083.48
Road at Portage du Fort.....	1,635.00
	<hr/>
Total.....	\$43,232.65

SAGUENAY WORKS.

These works, being new, required only very light repairs during the past year. Such as were necessary have been made, and the works are now reported all in good order for the "running season" in spring.

The repairs for 1862 cost.....	\$ 50.00
Maintenance	675.25
	<hr/>
Total.....	\$725.25

The property which passed through the slides in 1862, and the receipts thereon, are as follows:—

43,289 white pine logs, at 3 cents.....	\$1,298.67
7,000 spruce logs, at 3 cents.....	210.00
715 pieces ship timber, at 3 cents.....	21.45
	<hr/>
	\$1,530.12

ST. MAURICE WORKS.

There are at present six stations on the St. Maurice where public works are maintained under the charge of this Department, viz., at the mouth of the river, Grès du Lac, Shawenegan Falls, Grande Mère, Little Piles, and La Tuque. The works at these several stations consist of booms, piers, slides, and dams.

There are, in all, upwards of eight miles of booms, half a mile of side-piers and dams, thousand feet of slides, sixty-seven mooring-piers, and sixty-four anchor-piers. (See Superintendent's report, appendix F.)

The works at the several stations were placed in good order, and the booms extended good time, last spring, for the running of timber, and the first *drives* passed through without accident or delay; but the continued low water, during the summer, prevented several of the parties completing their *drives* until late in the fall, thereby obliging the Superintendent to keep the booms stretched and in full operation during the whole season, adding materially to the expense of maintenance, which has amounted to \$7,321.06, for past year.

The repairs effected during the last year were considerably more extensive than in former years, in consequence of it having become necessary to reconstruct some of the old works which were very much decayed. The principal part of this expenditure took place at La Tuque and at the mouth of the river. The cost of repairs for 1862 was \$5,641.36.

There has also been expended the sum of \$2,911.69 in new works, consisting of a side dam at the Little Piles, side-piers and booms at the Grande Mère, and side and wing dams and booms at the Shawenegan. The works are now in good working order.

The cost of repairs and management for the last three years is as follows :—

	1860	1861	1862
Repairs.....	\$ 837.91	\$1,198.25	\$ 5,641.36
Management.....	7,322.53	6,687.38	7,321.06
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Total.....	\$8,160.44	\$7,885.63	\$12,962.42
	<hr/>	<hr/>	<hr/>

The inconvenience experienced in the proper working of the booms at the mouth of the river, for want of the land necessary as a means of access to them, and a place where they might be secured, which was referred to in the last annual report, still continues; and the Superintendent again urges the importance of acquiring sufficient land to work these booms, without trespassing upon private property. It is recommended that a sum be entered on the estimates for this purpose.

TUG SERVICE, UPPER ST. LAWRENCE.

The arrangements under which the tug service between Montreal and Kingston was performed during the last two years, at a reduced bonus of \$20,000 a year, upon the same general conditions as were embraced in the contract which expired at the end of 1860, terminated with the close of navigation last year.

The service has been satisfactorily performed throughout the season. No complaints have reached the office from the parties engaged in the trade of the St. Lawrence; but, on the other hand, the ship-owners, forwarders, and others interested in this navigation, at all the principal towns and cities between Quebec and Hamilton, have, in a memorial to the Government, expressed themselves "well satisfied with the diligent and energetic manner in which the duties of the tug-line have been conducted."

The managers and agents of the Marine Insurance Companies doing business in Canada have likewise concurred in a memorial to this department, in which they state that no loss or detention of any moment has happened on this route for the last eight years, during which time Messrs. Calvin & Breck have had the contract. It is, however, reported by the superintending engineer "that the forwarders have been obliged to place their own tugs on the line, to prevent ruinous delays on each section of the line, more particularly on the tow between Cornwall and Lachine."

The following statement exhibits the number of towages on each section, up and down, and the amounts collected under the contract tariff, during the last two years :

UPWARD.	1861		1862	
	Towages	Amount	Towages	Amount
Lachine to Beauharnois Canal.....	1,187	9,610.57	918	6,936.83
Beauharnois Canal to Cornwall.....	975	15,963.56	825	12,830.18
Dickinson's Landing to Kingston.....	1,287	35,881.53	701	24,870.48
DOWNWARD.				
Kingston to Dickinson's Landing.....	1,028	20,550.86	579	13,529.63
Cornwall to Beauharnois Canal.....	797	7,972.57	584	5,716.33
Beauharnois Canal to Lachine.....	961	4,572.65	751	3,929.77
Total.....	6,235	\$94,551.74	4,358	\$67,813.22

There is a decrease this year of thirty per cent from the number of towages in 1861, and of 27 per cent in the amount collected.

In the performance of this service, the contractors were bound by their contract to employ at least six steamers ; but during the past year, they have frequently had nine in use. The name of these steamers and their horse-power is given by the contractors' engineer as follows :—

The Gildersleeve.....	97 horse-power.
“ Traveller.....	134 “
“ America.....	112 “
“ William.....	167 “
“ Sir C. Napier.....	92 “
“ Highlander.....	153 “
“ City of Hamilton.....	168 “
“ Chieftain	82½ “
“ Hercules.....	311 “

These were formerly passenger steamers, and have been converted into tugs for the occasion. It is extremely doubtful whether they are as well adapted for the service, and can be as economically worked, as tugs of more modern build constructed expressly for the purpose.

The peculiar nature of this navigation renders a tug-service indispensable.

The canals being isolated by broad lakes and strong currents in the intervening portion of the river, there cannot possibly be any connecting tow-path, other than the floating one which the tug-steamer supplies and for which it becomes a substitute. By these vessels, the canals are thoroughly linked together as one chain of navigation. It is obvious, then, that if sailing vessels are deprived of the reliable means of towage between stations, confidence in the route will be shaken, its efficiency seriously impaired, and the trade will suffer so great loss and detention as must tend to divert it into other channels.

The maintenance of the tug-line being essential to the proper use and working of the canals, it only remains to be considered how it can be rendered most efficient. So long as the contracts are made from year to year, or only for short periods, the contractors cannot

be expected to go to the expense of building vessels expressly for towing, but must purchase or charter such as are available, even if not so well adapted for the service. To render the line thoroughly efficient, the contract should be given for a term of not less than five nor more than ten years. In this case, it will be worth while to procure the best class of tugs, and both the tariff and the annual bonus might possibly be reduced.

It is therefore recommended that tenders be invited for the performance of this service, for a term of five or seven years, as may be considered most advisable.

LAKE AND RIVER LIGHT-HOUSES, BUOYS, &c.

ABOVE LACHINE.

The various works connected with the Lake and River lights above Montreal which are under the immediate control of this Department have been efficiently maintained during the past season.

The repairs have been of a general nature, such as are incidental to this class of works, and were principally performed at the following places, viz :—

Raising and replanking pier at Pointe Claire light ; repairs to light-ship, Lake St. Francis ; repairs at Cole's Shoal ; erection of a dwelling for the light-keeper at Wolfe Island, which is now being proceeded with ; repairs to Snake Island light-house ; building house for light-keeper at Scotch Bonnet ; protection of leading light at Presqu'Isle ; securing caisson at Pointe Peleé Reef ; erecting new store-houses at Isle of Coves ; repairs at Christian and Nottawasaga Island lights ; and making and replacing buoys at various points.

In addition to those mentioned in the last report, seven light-houses were fitted up during the past season for the purpose of using coal oil as a means of illuminating them. This oil has now been introduced in all the river lights, together with those on the lakes—thirty-seven in number—which are easily accessible, and to which the system can be successfully applied. It is proposed to introduce it into some other light-houses this year.

The maintenance of the light-houses between Lake St. Louis and Lake Huron cost, in 1862 :—

MAINTENANCE OF LIGHT-HOUSES AND BUOYS FOR 1862.

Repairs	\$ 3,376.99
Supplies.....	4,190.94
Coal oil.....	1,719.09
Sperm oil.....	7,580.00
Charter of steamer.....	1,350.00
Salary and travelling expenses of Superintendent.....	2,295.00
Light-house keepers' salaries	17,036.37
Steamer "Rescue" going to Isle of Coves.....	1,000.00
Placing buoys and light-ships.....	728.13
Purchase of land for light-house keepers' dwellings.....	168 10

Salaries of Harbor-Masters at Gaspé and Amherst.....	100.00
Advertising and printing.....	491.41
	<hr/>
Total	\$ 40,036.03
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Several of the repairs and improvements described and recommended in the last report still remain to be attended to ; action, in regard to some of them, can be no longer postponed. The cases thus referred to are :

The protection works at Gull Island light-house, Lake Ontario ; Mohawk Island, Lake Erie ; and Nottawasaga Island, Georgian Bay. Estimated cost \$3,460.

A new range light is required at Grosse Point, Lake St. Francis. At McKie's Point, the lake has made serious inroads upon the land on which the lighthouse stands. To stop this a rip-rap wall must be put around the point. A new lantern is also required.

At Cherry Island some repairs and a new lantern are necessary, and the Light Ship, Lake St. Francis, requires two new anchors. The pier on which the lighthouse at Lancaster stands requires protection. and the old pier should be raised. A house for the light-keeper on Grenadier's Island should be built, and a small store-house erected at Port Colborne.

The breakwater at Long Point, Lake Erie, should be extended, to prevent further inroads of the Lake upon the Point.

The lighthouse on Point Pelée reef is leaky, and must be thoroughly repainted. This structure being of wood and remote from shore, a water-tank should be fitted up, and proper hose provided to prevent accident by fire. The stone-work of the foundation should also be completed.

Measures will be taken during this winter to effect the change in the character of the lights exhibited at Point Pelee Reef and Pelee Island, referred to in the last annual report, by the opening of the navigation in spring. As the one upon the Reef will first be seen on going up the lake, it is intended to change it from a red to a white light, that it may be more readily seen, and to change the other from white to red. Due notice will be given to the trade when this change will be made.

To prevent further encroachment of the lake at Pelee Island lighthouse, additional protection works are indispensable.

At Bois Blanc, similar precautions will also have to be adopted. These, together with other minor repairs, are estimated to cost \$9,500.

LIGHT-HOUSES BELOW QUEBEC

Within the past few years, ten new light-houses have been constructed on the coasts and islands of the lower St. Lawrence. Four of these are leading sea-lights of a superior class, two of which are situated at the upper entrance of the Gulf, the third on the Strait of Bellisle, and the fourth on the south-west point of the Island of Bellisle, at the southern entrance of the strait.

The other six are river lights of less illuminating power and range, erected at different salient points and shoals, within what is known as the " Pilot Ground," between Father Point

and Quebec. These have been placed under the charge of the Trinity House, Quebec. After this transfer, it was reported that the pier on which the light at Crane Island was erected had received some injury from the ice last winter. It has since been repaired and protected by the Trinity House, at a cost of \$600.

Although the marking out of the headlands, points, and shoals has, no doubt, contributed greatly to the safe navigation of the ocean route of the St. Lawrence, there yet remains much to be done to enable mariners to avoid the dangers by which it still continues to be beset.

Were the contemplated improvements effected, ship-owners could not fail to have greater confidence in this route. The rates of insurance on both vessels and cargoes would be diminished, and freights might thereby be lowered so as to enable vessels navigating it to compete successfully with those trading to older-established Atlantic ports.

Some years ago, the Chief Engineer of this department made a thorough examination of all the sites where the erection of light-houses had been recommended by ship-owners, masters of vessels, and others interested in the safe navigation of the St. Lawrence; and, in 1859, he submitted a report descriptive of these places, in which he strongly recommended the immediate construction of several light-houses, and stated the order in which they should be proceeded with.

The most important of these are : the Bird Rocks in the Gulf, and the south-west point of Newfoundland, in the vicinity of Cape Ray, where lights are required to point out two dangerous points on the channel south-west of Newfoundland ; and for the safe navigation of that North of Anticosti through the Strait of Belleisle, a light at Cape Whittle is considered the most urgent.

BIRD ROCKS.

These dangerous rocks lie in the Gulf of St. Lawrence, in the direct track of vessels engaged in the Atlantic trade which pass by the route south-west of Newfoundland.

They are inaccessible, except during calm weather, which, in that vicinity, is generally of short duration and always uncertain.

It is universally admitted that the dread of "making too free" with these rocks has led to many shipwrecks on the neighboring coasts and islands, and that the erection of a light there would be of the greatest benefit to the navigation.

A full description of these islets, and of the difficulties which must be encountered in the building of a light-house at this place, together with an outline of the proposed mode of constructing it, will be found in the last annual report of this Department, and in the appendix to that of 1859. A due regard to the interests of navigation demands that this work be undertaken as soon as possible; but it is believed, from the circumstances above referred to, that the ordinary method of letting by contract would, in this case, be wholly inapplicable.

CAPE RAY.

Various places in this vicinity having been recommended as favorable positions for the

erection of a light-house, the coast was examined from Cape Aiguille, which forms the south-west side of St. Georges Bay (about eighteen miles north of Cape Ray), to Port aux Basques, which lies about nine miles to the eastward of it.

In this distance, three points attracted special attention, namely, Cape Ray, Pointe Enragée, and Duck Island; and after a careful consideration of the advantages of each, the Chief Engineer is of opinion that the light should be erected either on Cape Ray or Duck Island.

This island stands more to the seaward than Pointe Enragée, and lies about one mile and a half to the southward of it. It is from 10 to 12 acres in area, and generally about 25 feet over the level of the sea. From its vicinity to the anchorage of Grand Bay, materials and supplies can be easily landed.

A light on this place could not be obscured in any direction serviceable to inward bound vessels, nor shut out from view except by Cape Ray ($5\frac{1}{2}$ miles distant) to those outward bound; whereas a light placed on Pointe Enragée would be eclipsed in an easterly direction by the high islands south of Grand Bay.

But although a light on Duck Island would be more serviceable in an easterly direction, it would be in a less advantageous position than one on Cape Ray to vessels outward bound, especially if to the north of their course.

It is therefore believed that a light on Cape Ray would be of the greatest general utility.

This cape is about two-thirds of a mile wide from east to west. It is flat and bare, with the exception of the south-west side and part of the middle, which are covered with dwarf spruce.

Owing to the conical-shaped hills in the interior, it is remarkable from any point of view, and can be seen, in clear weather, at a great distance.

The proposed site of the light-house is about the centre of the flat described, 85 feet over the level of the sea, and one-fifth of a mile north of water-mark.

CAPE WHITTLE.

This cape is on the Labrador side of the Gulf of St. Lawrence, about $134\frac{1}{2}$ miles in a south-westerly direction from Greenly Island at the Western entrance of the Strait of Belle Isle. It is the most salient point of the coast; but on the south-west and south round to east, it is, for several miles outward, shut in by numerous islets and rocks, chiefly low, and barely perceptible until close up with them. About $6\frac{1}{2}$ miles to the south-east is a reef known as the "South Maker's Ledge;" these, together with the bend of the shore, render it one of the most dangerous places on that part of the coast.

The "South Maker's Ledge," although the most seaward point on which a light could be placed, is small, low, and much exposed; so that any structure placed upon it would require to be of the most substantial character, and capable of resisting the shock of the waves and the impact of heavy bodies thrown against it by the sea.

Thus a most difficult and expensive class of work would be indispensable, with many

drawbacks to contend against in the way of its execution. Its future maintenance would also be attended with great annual outlay.

Taking these matters into consideration, the Chief Engineer recommends that a Light house be erected on one of the "Cormorant Rocks," which lie about three-quarters of a mile to the Northward, and midway between Cape Whittle and the "South Maker's Ledge."

In this opinion Admiral Bayfield concurs.

The building at the latter place will be much less exposed, and, being between the two reefs, will serve generally to point out the dangers of this vicinity.

The houses for extra keepers and buildings for stores can be placed on an Island 1½ miles distant, inside of which there is a good harbor, with an entrance at its eastern and western ends.

Although the construction of a light at this place will cost less than the erection of one at "South Maker's Ledge," yet it will unavoidably be attended with considerable outlay.

HARBOURS OF REFUGE.

WELLER'S BAY.

The survey of this fine natural harbor was undertaken by the Department in 1861, to ascertain its condition and suitableness for a harbour of refuge. The survey was committed to the Honorable H. H. Killaly and was completed by Mr. F. A. Wise, under his directions, in October, 1861. The result is given by the former in his report of the 14th February, 1862, published in the annual report of the Commissioner of Public Works for 1861. He first states in general terms that "The results of the survey are very satisfactory, as they show that the state of the entrance, in all essential particulars, is in no way less favourable than at the period of the former survey," and then, after giving a brief description of the sheet of water called Weller's Bay, enclosed by the range of sand banks, and the capacity and condition of the entrance, concludes by recommending an outlay of £750 for lighting and buoying out the entrance.

Upon comparing this survey with the Admiralty Chart, the Chief Engineer noticed a shoal on the latter, off the entrance to the Bay and lying outside the field of Mr. Wise's survey, on which was marked only three feet of water, and suggested that it should be ascertained by further examination whether there was any shoal there, or not.

The shoal represented on the Admiralty Chart lies directly in the track of vessels entering the Bay, and would, without any doubt, if really there, prove a serious obstacle to the navigation.

With these facts in view, no chart could be accepted as correct until further soundings were undertaken to determine this question.

An Engineer from this office was, accordingly, sent there for this purpose, but, owing to the lateness of the season and the roughness of the weather, he found it impossible to make a proper survey. Still, after having sailed over the site of this shoal several times in every direction, in a vessel whose "centre board" was down, drawing 14 feet water, touching bottom, he reports that "there is at least 12 feet of water on it, even at

the present level of the Lake, which is some three feet lower than it has been for some time."

It may further be added that the published survey and sailing directions of Mr. J. N. Dumble for making this harbour, which is of recent date, show no trace of the shoal represented on the Admiralty Chart, and there is no record of any of the vessels trading at this port or seeking refuge in the adjacent harbor of Presqu'isle having touched upon it.

PROVINCIAL ROADS FROM THE ST. LAWRENCE TO NEW BRUNSWICK.

METAPEDIA ROAD.

This road forms an important means of communication between Canada and New Brunswick, not only as regards the military defence of the country, but also on account of the advantage it affords of a highway for the vast district of Gaspé and the Bay des Chaleurs.

In the terms of the annual report of my predecessor, page 46, "This road, when completed, will connect Canada with New Brunswick; and as it leads wholly through the interior of the country, it may be considered of even more importance than the Temiscouata Road, which passes within a short distance from the boundary line between Canada and the State of Maine."

It will be remembered that the Imperial Government, in a dispatch communicated to the Legislature of Canada on the 2nd of June last, recommended the immediate opening of the Metapedia Road. In accordance with this desire, the works have been vigorously pushed forward. The following is an extract from a report made by the undersigned, in October last:—

"This road having its terminus at the important and extensive Bay des Chaleurs, where there is a sufficient depth of water for ships of the largest size, it will afford a connection, at that point, for vessels coming from sea and from the colonies of New Brunswick, Prince Edward's Island, Cape Breton, Nova Scotia, and even Newfoundland.

"This new route, which is comparatively level or undulating, as stated by Mr. Bai-largé, Civil Engineer, in his report, and in which the steepest grades scarcely exceed one in ten, will, when completed, afford to the numerous population along the Bay des Chaleurs access, in winter as well as in summer, to the markets of the upper St. Lawrence, from which it has hitherto been debarred, and altogether cut off in winter. The lands along the line, being generally of excellent quality, will be settled rapidly.

"The general depth of Bay des Chaleurs, according to the chart of Lieutenant Bayfield, R. N., varies from 20 to 40 fathoms. There is a clear depth of ten fathoms in it up to Aboussic and to Henrent Point, on the Canadian side of the Bay, and six fathoms in Aboussic harbor.

"In order to convey a better idea of the utility of this road, it is well to recollect that this Metapedia or New Metis Road follows nearly the line surveyed by Major Robinson

in 1847, on behalf of the Imperial Government, for the projected intercolonial railway from Quebec to Halifax.

“ Distances as mentioned in Major Robinson’s report:—

“ The distance from Quebec to Halifax, by this line, is 635 miles; leaving for Canada a distance of 277 miles from Quebec to the frontier of New Brunswick, at Bay des Chaleurs.

“ The following table of distances is taken from Major Robinson’s report, and may be useful for reference:—

HALIFAX TO QUEBEC BY THE METAPEDIA LINE.

Halifax to Truro.....	55 miles	(built.)
“ to Amherst	69 “	124
“ to Shediac	26 “	150
“ to R. Miramichi.....	74 “	224
“ to Bathurst.....	56 “	280
“ to Dalhousie	48 “	328
“ to Metapedia R.....	30 “	358
“ to Neigette R.....	86 “	444
“ to Rimouski R	25 “	469
“ to R. du Loup	56 “	525
“ to Quebec.....	110 “	635

“ From the railway station at River du Loup to the intersection of the new Metapedia Road, a distance of 75 miles, there is a very good land road, running along the south shore of the River St. Lawrence. This section of the country is thickly peopled, and well-settled everywhere. It may be added that the lands all along and in rear of the settlements, for a breadth of sixty miles, are of a superior quality.

“ The Metapedia Road, which leaves the St. Lawrence at Ste. Flavie and runs across the Peninsular, reaching to Bay des Chaleurs and the frontier of New Brunswick, is divided into three sections, as follows:—

“ The north section, leading from the St. Lawrence to the head of Lake Metapedia, at Brochu’s.....	33 miles
The central section, running along the Lake Metapedia as far as Noble’s residence.....	27 “
The southern section, from Noble’s residence, along the Metapedia River, to the Ristigouche, which empties into the Bay des Chaleurs.....	38 “

98 miles.

“ The northern section presents a gradual incline from the St. Lawrence to the watershed at the head of Lake Metapedia, which divides the waters falling in a north-easterly direction into the St. Lawrence from those falling in a south-easterly direction into the Bay des Chaleurs; this being the summit between the St. Lawrence and the Bay des Chaleurs. There is very good land on this section, and the first twelve miles are thickly settled; the remaining twenty-one miles of road being entirely new, and passing through uncleared lands, are but sparsely settled, and only a few of the inhabitants reside along the road.

"The central section passes on the old Metis or Kempt Road. Improvement is all it requires; but it offers in no part of it any considerable elevation, or any obstacle sufficient to prevent the crossing of it, whether in winter or summer, although, in point of fact, it is still, to a certain extent, rough. It has been partly improved and will be entirely widened and levelled during next summer. There are at present only three resident settlers on this section.

"The southern section is the most difficult. It passes along the Metapedia River, in some places through a beautiful level country; but in other places the hills range near the river, leaving only a narrow strip of ground for the road. However, by digging on the one side, and throwing the earth and gravel on the other, a good road has been made and will be completed next summer; and it will be opened in all its length, as a good winter road, for the beginning of the cold season.

"In the fall of 1861, sixteen miles of this section had been completed as a good summer road; eight miles will be delivered completed at the end of the working season this year (1862), and the remaining part will be completed in the summer of 1863. It will be opened throughout, to be used as a good winter road, on the 1st January, 1863.

"Along this section there are some places very fit for settlement; but in other places the country is of so hilly a nature that it is not likely to attract settlers,—more especially in a colony where land of the best quality is sold as cheap as two shillings sterling per acre.

"It may be observed that there is no great difference of level from the starting point at River du Loup to Bay des Chaleurs by this road, and no great engineering difficulty would be encountered in the construction of a good road, or even of a railroad.

"By Major Robinson's survey it appears that the summit on this route is 763 feet above the sea, while by an official survey of the Temiscouata Road, leading from River du Loup to the western boundary of New Brunswick, on which a report was made to this office, the summit is 1,439 feet above the sea, and the distance between the terminus of this route and the frontier of the United States is only 12 miles.

"The number of men employed this season on the Metapedia Road has been about 550, at wages varying from eighty cents to a dollar a day. The width of the new road is from 16 to 22 feet.

"Besides the bridge over the River Metis, there are only three other bridges of any length, namely, over the rivers Causapscal, Assemetquagan, and Trois Iles. One of these will be ready for next winter, there is an old bridge on the other river, and all three may be easily crossed during the winter on the ice, being but small streams.

"This route may be considered a safe military road, having its connection with the navigation of the river and the Gulf of St. Lawrence, and running at a distance of nearly a hundred miles from the frontier of the United States,—except at the River du Loup railway-station, where the distance to the Maine frontier is only 27 miles.

"The connection also of this road with a harbour of refuge like the natural harbour of Bic is a paramount consideration: because, since the courageous and intelligent lead of the "Persia" into the waters of the River St. Lawrence, at such a late date as the 26th December, it is well established that steamships may come up the St. Lawrence as far as Bic nearly a month later in the fall, and, according to other reliable information, more than a month earlier in the spring, than sailing vessels now do. Bic harbour is distant 50 miles from the railway station at River du Loup, and 24 miles from the Metapedia Road.

“ Arrangements have also been made to connect the telegraph line, by this road, from Father Point to the northern boundary of New Brunswick, where it already connects with Halifax: so that it will be possible to communicate with Halifax or Quebec, or any part of the British North American Colonies, while crossing this road.”

Amount required to complete the road, and to pay balance due on existing contracts:

NORTHERN DIVISION.

Balance due on existing contracts.....	\$ 6,144.92
To complete 3½ miles of road, by day-labour.....	500.00
For the bridge over White River.....	2,200.00
	<hr/>
	\$ 8,844.92

CENTRAL DIVISION

Balance due on existing contracts.....	\$ 140.07
To repair the old road 27½ miles at \$100 per mile.....	2,725.00
Bridges on this division.....	2,000.00
	<hr/>
	\$ 4,865.07

SOUTHERN DIVISION.

Balance required for works under contract	\$21,921.61
For the bridge over the River Causapscal.....	3,000.00
Balance due on contracts for 1861	181.71
	<hr/>
Superintendence.....	2,000.00
	<hr/>
	\$40,813.31
Balance of the appropriation of 1862 remaining unpaid on the 31st December, 1862.....	16,309.12
	<hr/>
Amount required for 1863.....	<u><u>\$24,504.19</u></u>

The insufficiency of the estimate made for this road in 1861, may be attributed chiefly to the fact that at that time there was no question of constructing the road with more than ordinary care. But the Honorable the Secretary of State for the colonies having called the attention of the Canadian Government to the importance of opening this road for the transport of troops, and of rendering it available for the defence of the country, in the event of war with the neighboring States, it became necessary to make it in a more suitable manner, and, above all, to give greater strength and solidity to the bridges. These conditions swelled the expenditure and changed the base of the preceding estimates. Added to this, the works were hurried on, in order to render the opening of the road passable this winter, in case of need: and this also tended to increase the cost.

TEMISCOUATA ROAD.

This road leads from the railway station at River du Loup to Lake Temisconata, and, winding round that lake to the west, extends to the frontier of New Brunswick. It is 66.93 miles long.

This road was used for the passage of Her Majesty's troops in the winter of 1862. It became necessary, in consequence, to open and maintain the means of communication during the months of January, February, and March, 1862, the cost of which amounted to \$6,321.95

One mile and three quarters of this road remain unfinished, and some repairs are indispensably necessary.

A bridge at the River Pollok was burnt in June last, causing a delay in the service of the mails, and rendering the passage dangerous for travellers; the bridge has been reconstructed, and some urgent repairs were made last October, under the superintendence of Mr. Oliver Ouellet. The whole cost \$751.48.

To put this road in good order, it is necessary to build a mile and three quarters—estimated at.....	1,750 00
Indispensable repairs and superintendence.....	4,250.00
	<hr/>
	\$6,000.00
	<hr/>

According to the section of this road, carefully prepared by Mr. Joseph Rosa and his assistant Mr. J. C. Simpson, during the winter of 1862, its greatest altitude is 1,467 feet above the level of the sea.

STATEMENT OF EXPENDITURE THIS YEAR.

TEMISCOUATA ROAD.

Paid for keeping up the road during the months of January, February, and March, 1862, for the passage of Her Majesty's troops.....	\$6,321.95
Paid Rosa and Simpson for plan and section of the road.....	1,109.65
Paid the Hon. Mr. Baby, on the 21st May, '62, in compliance with an order in Council of 20th May:—balance due on old claim.....	7,908.83
Paid Oliver Ouellet, for re-building Pollock's Bridge and repairing the road, in October, 1862—by order in Council of 13th September, 1862....	751.48
	<hr/>
Total amount expended in 1862.....	\$16,091.91
	<hr/> <hr/>

(Signed)

J. BAINE,

Book-keeper,

15th January, 1863.

DISTANCE OF ROADS BETWEEN QUEBEC AND HALIFAX, COMPARED.

METAPEDIA ROAD.—(MAJOR ROBINSON'S SURVEY.)

	miles	
Halifax to Truro.....	55	constructed
“ Amherst	69	124
“ Shediac	26	150
“ R. Miramichi...	74	224
“ Bathurst.....	56	280
“ Dalhousie.....	48	328
“ R. Metapedia....	30	358
“ R. Neigette.....	86	444
“ R. Rimouski	25	469
“ R. du Loup.....	56	525
“ South Quebec....	110	635
Total distance...		635

Greatest elevation 763 feet above the level of the sea—according to Major Robinson's report and sections.

TEMISCOUATA ROAD.

	miles	
Halifax to Truro.....	55	constructed
“ Amherst	69	124
“ Peticodiac.....	44	168
“ St. Jean.....	96	264
“ Intersection of St. André and Woodstock at Bay du Chêne }	66	330
“ Woodstock.....	86	416
“ Grandes Chûtes.	70	486
“ Boundary line....	50	536
“ G. T. Railway }	64	600
“ at R. du Loup. }		
“ South Quebec....	110	710
Total distance...		710

Greatest elevation, 1,437 feet above the level of the sea.

MATANE AND CAP CHATTE ROAD

This road winds along the banks of the river St. Lawrence, running down towards the gulf. It is, properly speaking, only 38 miles long, from Matane to Cap Chatte, and is but the first step in the great avenue of communication which it is highly important to open along the river as far as Gaspé Basin.

This road has been of great service to those poor sailors whose vessels were lost by shipwreck this autumn, near Cap Chatte. It is becoming rapidly settled.

The works, which on this road are performed by day-labour, were commenced on the 25th June, and continued until the 17th September.

Twenty-seven and a half arpents of new road have been made in different places, to avoid the very steep grades, which could not be reduced without incurring a very heavy outlay.

Thirteen grades, comprising 16 arpents of road, have been reduced by lowering the summit from 3 to 8 feet, and raising the base as much.

Ten miles and eight arpents of road have been repaired, and eighteen new culverts made.

Two bridges, one on the Grand and the other on the Little River Capucin, have been demolished, the embankments or abutments having been undermined by the action of the water. They have been reconstructed on a solid foundation.

The bridge over the Grand Méchin River, having been burnt last spring, was rebuilt; it is constructed with two embankments or abutments, and a pillar in the centre. This bridge is 150 feet long, 10 feet high, and 16 feet wide; it cost \$452, whereas the lowest price required by the contractors was \$600.

There remain still about ten miles of road to be repaired, and two bridges to be con-

structed, in order to avoid the banks of the Ruisseau à Sem and Ruisseau de la Vapeur. These four banks are very steep and dangerous, particularly in winter.

Amount of expenditure in 1862.....	\$1,831.00
Amount required to repair 10 miles of road.....	\$1,550.00
To construct two bridges.....	1,000.00
Total.....	\$2,550.00

GASPÉ AND ST. LAWRENCE ROAD.

This road passes through the territory of the district of Gaspé, lying between Gaspé Basin and the boundary line between the counties of Rimouski and Gaspé. This vast range of territory, having a frontage of 138 miles on the River and Gulf of St. Lawrence, possesses no road of communication whatever, except over a tract of country 23 miles long, extending from Fox River to Gaspé Basin.

In 1860, the Hon. Mr. Rose, then Commissioner of Public Works, caused a survey of this territory to be made on a scale of great magnitude, under Mr. G. F. Baillargé, a skilful and laborious Engineer of this Department, who made a minute report and drew up plans of great interest, which are now deposited in this office. These plans show an exact survey over an extent of 150 miles in length and 20 miles in width, and the exploration of 150 miles of road between St. Anne des Monts and Fox River, the Great Valley des Monts and Gaspé Basin. The report is printed in the appendix.

This road forms the last link in the great chain of communication which runs along the south shore of the River St. Lawrence. If it be undertaken, it should at first be made narrower than other roads; and by constructing it gradually, section by section, from year to year, it would cost less, and the lands bordering upon the projected line of road would be occupied by settlers in proportion as the work progressed.

The portion of the road leading from Gaspé Basin to Fox River is now open. The works have been skilfully conducted under the superintendence of Antoine Painchaud, Esq, surveyor, whose report will be found in the appendix.

It is expedient to carry on the works on this road by degrees, and for this purpose a legislative grant is necessary.

Amount expended in 1862.....	\$3,727.77
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MALBAIE AND GRANDE BAIE ROAD.

This road is used as a mail route between the village of St. Etienne de la Malbaie, on the St. Lawrence, and that of St. Alexis de la Grande Baie, on the Saguenay

As stated in previous reports, its total length is estimated at 76 miles, 10½ of which, the Malbaie terminus, have been made by the inhabitants, and 65½ are being made by the Government.

In its present state it is passable throughout for sleighs in winter, but is not practicable for carts in summer.

The work done up to the present time may be described as follows :—
 Nearly 8 miles opened, 18 feet wide, with proper forming and drainage, and 6 feet of clearing beyond the side ditches at Grande Baie.

6 “ opened, 12 feet wide, with partial forming and drainage, and no clearing beyond the River St. Jean

9½ “ similar to the latter, but not quite completed at the Passe des Monts.

Total, 23½ miles, which may be used as a summer road.

The remainder, for a distance of 42 miles, has been opened only as a winter route, for a breadth of about 8 feet.

The work done during the past year and the entire expenditure incurred may be detailed thus :—

The northern terminus of the road across the settlements of the Grande Baie was fenced in on both sides for more than a mile ; 4½ miles of road were opened, of which 3½ have been formed with a breadth of 18 feet, and a clearing of 6 feet beyond the side ditches—the remainder being only 12 feet wide, without clearing. Eight bridges of a total length of 224 feet have been constructed, together with several culverts, and the remainder of the route has been cleared of fallen trees, and repaired.

Expenditure in 1856	\$ 2,000.00
“ 1859.....	4,000.00
“ 1860.....	1,851.41
“ 1861.....	2,272.41
“ 1862	1,831.91
Total.....	<u>\$11,955.73</u>

According to the original estimate, a further appropriation of \$4,500 will be required for the completion of the work ; but this estimate, it must be observed, is for a road only 12 feet in width, of the most inferior kind, with partial formation and drainage, without clearing, difficult to travel over in wet weather, and frequently obstructed by fallen trees.

This road being the only land communication between Malbaie and Saguenay, it is desirable that it should be completed as soon as possible, and that it should be thoroughly formed and drained, with clearing for a breadth of 66 feet.

Although the country traversed by this route is very mountainous, there is a considerable extent of land fit for cultivation along the line, for at least 21 miles. During the past two years, lots have been taken up by settlers for a distance of 9 miles from Grande Baie ; the remainder is likely to be settled as the work progresses.

PROJECTED ROAD.

CARTIER ROAD.

At the request of the member for Saguenay, orders were given to an officer of this Department to examine this proposed line of communication between Malbaie and Grande Baie last summer.

The object of the examination was to ascertain if this new route, which the inhabitants of Malbaie had opened last year as a winter road, on the east side of the Malbaie River, and which they recommend the Government to open as a summer road, should not be adopted in preference to the route traced about fifteen years ago, on the west side of the same river, by Mr. James Stewart, under orders from the Department, and now in course of construction.

By the adoption of the projected line, all work done since 1855 on the first forty miles of the northern portion of the old route was to be abandoned; that done on the thirty miles of the southern portion, which is common to both routes, was to be preserved.

The reasons given for its adoption were that the new line was 12 or 15 miles shorter than the other, that it passed over land generally level, that it would be advantageous for the colonization of new townships and far more useful for the settlers of L'Anse St. Jean, and that its cost of construction would be far less than that of the old line.

The result of the examination made is shewn by the following extract from the report furnished on the northern portion :

"As a winter road, the portion of the new line just described is certainly preferable, with respect to grades, to the corresponding portion of the old line through St. Agnes and the Passe des Monts ; the ascents and descents across the hills are shorter and of much easier grade.

"Last year the inhabitants of Malbaie, after having opened the line for the passage of winter vehicles, constructed four buildings, provided with good stoves, at convenient distances along the route, for the shelter of travellers and of their horses.

"As a summer road, it may be considered impracticable, on account of the great cost of its construction upon land nearly one half of which is paved or covered with boulders, and on account of the narrow gorge called La Passe des Roches, where enormous blocks of rock, fallen from the summits of gigantic mountains, present obstacles too costly to overcome.

"As a colonization road, it offers but few advantages, the lands being either unfit for cultivation or of a poor quality for more than half the distance.

"In conclusion, I must observe that it is only necessary to pass over the line once in summer, to be convinced that this report is far from exaggerating the unfavorable nature of the soil traversed by this portion of the projected road."

ESCOUMAINS ROAD.

This is an extension of the road on the north shore of the St. Lawrence, from the Township of Callières, or County of Charlevoix, to the mouth of the Saguenay, opposite

Tadousac, a distance of about 12 miles,—and thence to the River Escoumains, 20 miles further eastward.

It has been rendered practicable for wheeled vehicles from Escoumains to Bergeronnes for about 10 miles ; and thence, for winter vehicles, to Tadousac, 10 miles further.

The lands are being settled rapidly in the various townships traversed by this road.

A fine village has been formed at Escoumains, where the Pères Oblats have established the principal mission and constructed a church near the mills.

Only one mile of road has been constructed during the past year, owing to the boggy nature of the ground, which was covered with the heaviest description of timber and boulders. Fascening was required for most of the distance, and 9 bridges, some of which are of an expensive character, being across tidal streams, had also to be constructed.

The amount expended was, in 1856.....	\$2,000.00
“ “ 1861.....	1,537.50
“ “ 1862	1,011.00
Total	<u>\$4,548.50</u>

The amount required this year for the further prosecution of the works is \$3,000, of which \$1,200 will be chiefly devoted to the construction of two very important bridges required across the Rivers Grandes and Petites Bergeronnes.

THE PROVINCIAL STEAMERS.

These vessels have rendered important service to the trade and navigation of the Lower St. Lawrence during the past year. They have performed the service for the protection of the fisheries ; the service of the light-houses, buoys, and beacons under the Trinity House ; the postal service to the lower ports ; relieved vessels in distress ; and have been instrumental in the preservation of property valued at upwards of four hundred thousand dollars. For particulars, reference is made to the statement published in Appendix L.

The several steamers have been employed during the past season in the following manner :—

The “ *Lady Head* ” made fourteen trips to the lower ports as far down as Pictou, carrying the mails and passengers. She was laid up in the floating-dock in Palace Harbor on the 21st of November.

The “ *Queen Victoria* ” was employed in the towage of vessels, and also in giving assistance to vessels in distress. She supplied the place of the “ *Lady Head* ” for the seventh trip, during the time the latter was undergoing repairs, and she was employed on two occasions for the conveyance of His Excellency the Governor General and family, one trip down the river and the other to Montreal. In the month of August, she was despatched to Shediac to bring up His Excellency Lord Mulgrave, the Lieut. Governor of Nova Scotia. She performed the last service of the season for the Trinity House in bringing up the floating light from the “ *Traverse*,” and as no further services could be rendered to the trade

her this, she was laid up in winter quarters at Blais Booms, Cap Blanc, on the 5th December, the season being too far advanced to admit of placing her in a floating dock.

The "*Napoleon*" made her first trip for the special service of the fisheries in the month of May, and left again on the 2nd June for the combined service of the fisheries and the Trinity House, to the light-houses and depôts in the gulf and in the straits of Belle Isle. During the entire season she was placed at the disposal of the stipendiary magistrate, P. Fortin, Esq., appointed for the protection of the fisheries. On her return on the 31st of October, she was employed towing vessels, and was laid up for the winter in a floating dock at Gilmour's Cove, on the 25th November.

The "*Advance*" was used to place in spring and take up in autumn the numerous buoys on the Upper and Lower St. Lawrence. She has likewise on several occasions replaced the buoys which had been moved or carried away by the current or by ice, and has been employed for the erection of new beacons on the Lower St. Lawrence. In addition she has performed all other services required by the Trinity House. During the month of August and September, she had on board the officers and apprentice-pilots of the Trinity House, taking soundings in the north and south channels, as required by the Act 12, Vic. Cap. 44, Sec. 22. After this she was used for towing vessels, and at the close of the season, on the 21st November, was laid up for the winter in the floating dock at Palace Harbor.

Upon the next page will be found a statement of the receipts and expenditure in connection with the operations of these steamers. Although the direct revenue from these vessels does not appear at first sight to be equal to the annual appropriation, still, if credit be taken for the services performed for the Trinity House, for the transport of the mails, and for the protection of the fisheries, it will be observed that the saving of expense or indirect revenue more than counterbalances the cost of working them. If they were sold, and the services they now render performed by chartered vessels, it would cost not less than is stated in the report of the Commissioner for 1859, namely :—

For mail-service to the Lower Provinces.....	\$10,000
Trinity House service.....	8,000
Trips to Lighthouses, &c.....	12,000
Protection of Fisheries.....	10,000

Total.....	\$40,000
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It is satisfactory to observe a considerable increase in the revenue from the service of the steamers over the previous year.

The appropriation for 1861 was.....	\$50,000
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That for 1862 was.....	30,000
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Still, after paying working expenses, and without taking credit for the postal service, the Trinity House, and the fisheries, as above, there is an available balance at the end of the year of \$21,970.76, applicable to the operations of 1863, so that a lesser appropriation will be required for this year.

PIERS.

LANDING PIERS BELOW QUEBEC.

In 1861, the attention of the then Commissioner was drawn to the condition of the landing-piers constructed by the Government on both sides of the St. Lawrence, below Quebec. No repairs having been made to these public works for several years previous, although they had all suffered, more or less, from use and from exposure to storms and running ice, it was then considered necessary that measures should be adopted by this Department for the protection and preservation of these valuable works.

Certain repairs were accordingly authorised that year, which were carried on and completed during the past year, before the undersigned took office, at the piers at Malbaie, River du Loup, Les Eboulements, and Pointe aux Orignaux, a statement of which is given below.

As no outlay whatever for repairs had been incurred on the pier at Rimouski since its completion, although from its great length and exposed position it had suffered more than any of the others, the undersigned was induced, from the representations made to him of its neglected and dangerous position, to order a survey of it to be made by two competent officers of this Department. This duty was performed by Mr. Gauvreau and Mr. Rubidge, whose separate reports will be found in appendix I.

From the report of the last named officer, it appears that upwards of three hundred feet of the outer end had settled so far from the perpendicular as to threaten its dislocation and fall. One side of the pier was $5\frac{1}{2}$ feet below the other, which rendered it impassable for wheeled vehicles, and difficult even for foot passengers.

The remedy suggested was to sink a line of cribs on the lower side, and on these to level up the work to the original horizontal line. These repairs were estimated to cost \$6,846.00, and the work has since been placed under contract at that estimate. It was proceeded with last year as far as the weather would permit, and preparations are being made this winter to prosecute the work to speedy completion in the spring.

A small outlay has taken place at L'Islet, for repairing the inclined landing-place.

REPAIRS OF LANDING PIERS BELOW QUEBEC.

	1861	1862
Malbaie	\$ 405.00	\$ 838.72
River du Loup.....	1,137.50	900.00
Eboulements.....	550.00	795.75
L'Islet.....		123.00
Rimouski.....		2,060.28
Pointe aux Orignaux.....	1,234.80	
T. Trudeau		21.50
	\$3,327.30	\$4,734.20

PIER AT ST. ANICET.—LAKE ST. FRANCIS.

The appropriation 22 Vic., Cap. 83 has been applied to the construction of a steam-landing-pier at the village of St. Anicet, situated on the south shore of Lake St. Francis, in the County of Huntingdon.

The expenditure was entrusted to the local municipality, as being more immediately interested in the improvement; and the work was performed by contract under it, subject to the visits and reports of an officer of this Department, upon whose certificate of work the payments have been made.

The site was selected by the Chief Engineer of this Department. The pier, including approach, is three hundred and fifty feet in length, and is formed of a continuous superstructure, resting on detached cribs sunk twenty feet apart. The outer end, for 150 feet, has a breadth of thirty-four feet. The whole is reported to be well and solidly built. It was completed in August last. The expenditure in 1862 was \$1,920.

OFFICIAL ARBITRATORS.

In the Appendix (K) will be found a detailed statement showing the result of the proceedings before the Official Arbitrators, during the past year.

The Arbitrators held sittings in Quebec in the months of January, March, April, June, September and October, and one in Montreal and Beauharnois in May. The number of sessions on which they met for the despatch of business is seventy-seven. Awards were given on six claims, one of which has since been appealed. Three claims are still pending, and two have been struck off the roll.

The Awards amount to.....	\$ 5998.85
The pay and expenses of the Arbitrators and Secretary, printing, stationery, and office expenses, &c.....	5713.96
Law costs, witnesses, &c.....	1634.50
Total.....	<u>\$13,347.81</u>

These are the amounts properly chargeable to Arbitrations in 1862, but as several payments were made during this year for the awards and expenses of 1861, the gross expenditure, as given in Appendix A, is \$24,663.02.

PUBLIC BUILDINGS.

Custom Houses. No expenditure has taken place on any of these buildings.

Post Offices. The only outlay has been the sum of \$381.75, for certain indispensable repairs at the London Post Office.

Montreal Court House. The sum of \$4,141.31 has been expended on this building, for repairs to the roof, and masons' work, and for the more perfect ventilation of the Sheriff's offices.

Montreal Gaol. A proper work-shed within the yard of this gaol is very much needed for the shelter of the convicts while employed at manual labor. A plan for a suitable building of brick 120 X 30 feet has been prepared, and the cost estimated at \$3,983.

A plan has also been prepared for the proposed addition to the central wing of the gaol, to be of stone, 104 X 46 feet, and four stories high, to accommodate 160 prisoners; and estimated to cost \$48,472.

The number of prisoners confined within the old gaol during the past year has varied from 270 to 400, whereas it is not properly adapted for the reception of more than 300 at any season. In summer, it is frequently so much overcrowded that three or four prisoners have to be confined in one small cell, and, the ventilation being very imperfect, the air becomes tainted and unwholesome. According to the representation of the Sheriff and Gaoler, this has been the case for several years past, and, the subject having come under the notice of the Prison Inspectors, this plan has been prepared under their directions, for the purpose of providing the accommodation which, in their judgment, is considered a matter of absolute necessity.

The increasing population of the city having outgrown the provision made in former years for this class of the community, common humanity demands that some action be taken without delay to supply what is requisite for the numbers which are yearly added.

It is respectfully submitted whether these two sums, amounting to \$52,735, should not be embraced in the Estimates for this year.

It is further suggested whether it might not be advisable to employ the prisoners themselves in building this addition to the gaol, in the same manner as has been adopted at Kingston, in the erection of the Criminal Lunatic Asylum. By a proper system of management, it is thought that a large portion, at least, of the work might be performed by convict-labor within the limits of the gaol-yard.

Various minor repairs, which do not call for any particular remark, have been made upon the following buildings :

The Marine Hospital, Quebec.

The Court-Houses at Sherbrooke, Aylmer, and Three Rivers. And

The old gaols at Quebec and Montreal.

Public Buildings, Toronto. Occupation of the Parliament Buildings at Toronto was granted to the Military authorities, for officers' quarters, and possession given to the barrack-master on the 11th July, 1861, on condition that "they were to be given back in the same order as received."

A fire occurred in the east wing, which was reported on the 18th July, 1861, as arising to a faulty flue, but it was subdued before much damage was done, and the repairs duly effected.

A more serious fire took place in the west wing on the 24th July, 1862, from some unknown cause, which destroyed the entire roof, and did much damage to the interior of the building.

The roof has since been rebuilt and the restoration of the wing effected by the Military authorities, who still remain in possession, free of rent, and during the pleasure of the Government.

Occupation of the Government House and adjoining stables was also granted to the Military authorities on the same terms. The keys were delivered over to the barrack-master on Thursday the 9th January, 1862, and on Friday the 10th, a fire occurred which destroyed the state portion of the building, but left the parts used for domestic purposes, as well as the stable, still available.

The Military authorities were duly apprised of the occurrence, but, as yet, have taken no steps to restore the building to its former condition.

Departmental Offices, Quebec. The various buildings owned or leased for the several departments of the Civil Government have required only ordinary repairs, and have been maintained at a moderate expense. It has, however, been necessary to provide additional accommodation for the Militia Department and the Bureau of Agriculture, by leasing and fitting up private dwellings for their use.

The Governor General's Residence. The expenditure which has taken place during the past year upon the two houses in St. Louis street, used for the residence of His Excellency the Governor General, arose from the liabilities incurred and payments made for alterations and additions to them, undertaken in 1861, which were not completed until the early part of 1862.

The expenditure in 1862 was \$48,855 82. This includes the building and fitting up of the stables, which are on public property, and the furniture and carpeting which will be available for use at Spencer Wood when these houses are given up.

Spencer Wood. The reconstruction of the Governor General's residence at Spencer Wood, in a plain, substantial manner, has been effected within the amount appropriated for it at the last session of Parliament. The expenditure in 1862 was \$14,263.76; and the payments which have since been made, or for which this Department is liable on account of this building, will still fall within the amount voted for it. These payments cover the cost of painting the walls and ceilings, the enlargement of the stables, and the repairs of the carriage-house and outbuildings.

To render this a suitable residence for His Excellency, both for winter and summer, it will be necessary to rebuild the conservatory at one end of the building for keeping plants and flowers; and for the preservation of the exterior walls, as well as for the sake of improving the appearance, the red brick should be painted.

Cataragui. According to the agreement entered into between one of my predecessors the former owner, Mr. Burstall, this property, after it was no longer required as a

residence for the Governor General, had to be sold at public auction, and any deficiency in price, short of the \$20,000 agreed upon, was to be made good to the owner. The property was accordingly advertised, and sold at public auction on the 2nd instant, when it realized the sum of \$12,100. The balance payable to H. Burstall, Esq. will have to be provided for in the Estimates.

OTTAWA BUILDINGS.

In the prosecution of these buildings, a great quantity of work unprovided for in the estimates having been proceeded with, the original appropriation was largely exceeded, and it was considered proper to suspend further operations in October, 1861.

On the 27th June, 1862, the Government, therefore, appointed a special Commission of Enquiry into matters connected with them; and, under these circumstances, it was deemed unadvisable to resume the works, or to take any steps which might disturb the relations existing between the Department and the contractors when they were stopped. Consequently, no further progress has been made towards their completion since that period.

The Department has, however, endeavoured to render every possible assistance to facilitate the researches of the Commission; and, with that object in view, the Chief Engineer was sent to Ottawa in July last, with all the official documents relating to the buildings for reference on the spot. All the clerks and measurers of works were, upon his recommendation, immediately transferred to the service of the Commission, in order to aid in carrying out the object for which it was named.

The principal evidence on these matters having been closed, further reference to the records of this Department, with few exceptions, ceased; and the officer entrusted with them was then directed to take means to protect the buildings from injury by the winter of 1862-3.

This has been thoroughly performed by covering in the works themselves and such materials as were liable to damage by exposure to the inclemency of the weather. In order to carry out these measures, the services of two of the clerks of works had to be withdrawn from the Commission for about six weeks.

When this was accomplished, the Chief Engineer returned to Quebec, from whence he was almost immediately sent back to Ottawa, with instructions to obtain such information regarding the present condition of the works and all matters connected therewith as would enable the Department to adopt the most satisfactory mode of resuming them, when it should be found practicable to do so.

It is believed that by this means the Department will be enabled to take prompt action in regard to these works.

NEW DISTRICT COURT HOUSES AND JAILS, C. E.

In the last annual report, it was stated that nine of the thirteen buildings had been completed and handed over to the local authorities at Beauharnois, St. Scholastique, Kamouraska, Sweetburg, Sorel, Industrie, St. Johns, Montmagny, and Chicoutimi.

Those at Rimouski, Malbaie, Beauce, and St. Hyacinthe were completed and transferred to the Sheriffs last year.

Each Building has been insured for \$12,000 in the name of the Sheriff of each district.

Enclosure walls are required for the jail yards of the above localities. As no provision had been made, hitherto, for the same, it is desirable that their construction should proceed with as soon as the necessary funds are available for the purpose. A sum of \$1,800 will be required for each wall.

The outlay for the construction, fitting, and furnishing of all the jails and court-houses named above is shewn by the following statement:—

AMOUNT expended on Jails and Court-Houses, C. E.: 20 Vic., Ch. 44, under this Department, up to 31st December, 1862, and charged to the Municipal Loan Fund.

	Construction	Fitting up	Total cost
St. Scholastique.....	\$27,751.14	1,338.32	\$29,089.46
Industrie.....	30,574.74	849.38	31,424.12
Malbaie.....	26,808.62	1,264.91	28,073.53
Beauce.....	30,675.15	1,483.29	32,158.44
Chicoutimi.....	28,964.48	736.89	29,701.37
Rimouski.....	31,809.21	832.73	32,641.94
Montmagny.....	32,746.80	854.13	33,600.93
Beauce.....	26,495.94	861.06	27,357.00
Kamouraska.....	29,241.59	1,491.63	30,733.22
Sweetburg.....	25,617.96	939.55	26,557.51
St. Hyacinthe.....	33,306.50	897.30	34,203.80
St. Johns.....	25,371.36	769.57	26,140.93
Beauharnois.....	29,700.09	808.95	30,509.04
	\$378,973.58	\$13,198.21	\$392,171.79

(Signed,) J. BAINE,
Book-keeper.

KAMOURASKA JAIL AND COURT HOUSE.

This building was partially destroyed by fire on the 9th of last December. Since that date the business of the Court has been carried on in another building, rented for the purpose at the rate of \$1.20 per day.

A small building has been rented also for the use of the prisoners, at the rate of \$60 per year.

Both of these buildings may be remitted to the proprietors after twenty-four hours notice.

The estimate furnished for the reconstruction of the addition built in 1859, so as to render it suitable for the double purpose of a Jail and a Court-House, amounts to \$3,850.

A further sum of \$800 will be required for supplying the building with the requisite furniture. Part of this sum has been already authorised to be expended for the immediate accommodation of the officers of the Court.

MAGDALEN ISLANDS, COURT-HOUSE AND JAIL.

This building, which has been erected on one of the Magdalen Islands, called Amherst, was completed last October, and was afterwards handed over to the Sheriff.

It was commenced in June, 1861, and should have been completed on the first of November of the same year, according to the terms of contract; but difficulties arose respecting the site to be selected for the building by the municipal authority, in consequence of which the work had to be postponed, and a claim for damages was sent in by the contractor.

Amount paid to contractor for work performed.....	\$5,134.20
“ “ “ per award of Arbitrators.....	1,366.66
“ “ “ for witness fees.....	39 60
“ “ “ for superintendence.....	671.70
Total.....	<u>\$7,212.16</u>

The building has been insured for \$6,000 in the name of the Sheriff.

COURT-HOUSE AND JAIL.—SAULT STE. MARIE.

It was stated in the last annual report that this work was given out by contract, but that the Contractor had failed in fulfilling his engagements. The works having been condemned by the officer in charge and abandoned by the Contractor, no further expenditure has taken place during the past year.

Owing to the very limited and inadequate appropriation for this building (\$4000), the Department was restricted to the adoption of a plan for a cheap wooden structure; but, as this did not meet the approval of the Board of Prison Inspectors, it was not deemed expedient to proceed upon this plan after the work was abandoned by the Contractor.

By direction of my predecessor, another plan has since been prepared for a stone building, to give better security and larger accommodation, suitable to the wants of the District, and conformable to the principles and conditions laid down by the Board of Prison Inspectors. The cost of such a building, including drainage, water-supply, and inclosure of Jail yard, is estimated at \$17,800. The Department cannot, therefore, undertake the construction of a building suitable for the wants of the District, until adequate funds are provided.

NEW JAIL, QUEBEC.

The original plan of this jail, which was prepared by the architect in accordance with the principles and conditions laid down by the Board of Prison Inspectors, contemplated the erection of 276 cells; but when it became known that a building of this magnitude would cost about twice as much as the amount at which the expenditure was then limited, namely, \$64,000, the plan was altered. A part of the central body and one of the wings were omitted, the front of the central portion reduced by one story, and brick jambs and interior lining of walls substituted for stone. This was done in order to keep the expenditure within the prescribed limit. By these alterations, the number of cells has been reduced to 138. After the contract was entered into upon this modified plan, certain changes were made for the safe-keeping of the prisoners, as stated in the last annual report. These changes and the reasons which led to their adoption are more fully set forth in the annual report of the architect in charge, which is given in the appendix H.

The contractors resumed the works early in spring, and continued their operations throughout the season, except for a few weeks in August and September, when their force became very much weakened; but they recommenced operations with vigour on the 25th September, from which time to the end of the working season a strong force was constantly employed.

The architect reports that the whole of the outer walls are now completed, together with most of the interior masonry, the roof-trussing well advanced, and that the quality of the work is satisfactory. He has given such full information in his report, in reference to this work, that it is unnecessary here to allude to it, further than to supply, from his previous measurements and returns, a detailed statement showing the general condition of the contract on the 4th October last, shortly after the works had been resumed. This statement is given in the appendix H, and shows the gross amount of contract and extra works then authorized, the amount of payments made, &c., &c., &c.

THE FOLLOWING STATEMENTS ARE APPENDED TO THIS REPORT.

No. 1. Statement of the several works under the charge of this Department which are in use and yield revenue; showing, under different heads, the expenditure on construction and the amount paid for land damages during the year 1862; the total cost of construction under this Department to the 1st January, 1863; and the cost of repairs and management during the year 1862.

No. 2. Statement of Public Works under the charge of this Department, incomplete and, as yet, unproductive, but on which tolls are to be levied as soon as they are available; showing the expenditure thereon in 1862, on construction, and on repairs and management, and the total expenditure up to 1st January, 1863.

No. 3. Statement of several Public Works Buildings in course of construction and under the charge of this Department, yielding no direct revenue, but in use for the public service, and authorized by Legislative appropriations; showing the amount expended thereon

during the year 1862, and the total outlay upon them up to 1st January, 1863 ; also the amount expended in repairs and maintenance for the same period.

No. 4. Statement of expenditure on certain miscellaneous services under this Department during the year 1862.

No. 5. Statement of the expenditure incurred under this Department for the repairs and management of the Ordnance Canals for the year 1862.

No. 6. A detailed statement of the expenditure incurred in repairs and maintenance of Provincial Light-Houses for the year 1862, under this Department.

No. 7. Statement showing the total amount expended under the Department of Public Works during the year 1862, as detailed in the foregoing statements, numbered 1, 2, 3, 4, 5, and 6.

All of which is respectfully submitted.

U. J. TESSIER,

Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS,

Quebec, 20th February, 1863.



APPENDIX TO THE REPORT

OF THE

COMMISSIONER OF PUBLIC WORKS,

FOR THE YEAR 1862.

APPENDIX A

No. 1

STATEMENT of the several Works under the charge of this department which are in use and yield revenue, shewing, under different heads, the expenditure on construction and the amount paid for land damages during the year 1862, the total cost of construction under this department to the 1st January, 1863, and the cost of repairs and management during the year 1862.

NAME OF WORK.	Expenditure on construction during the year 1862.	Amount paid for damages in 1862.	Total expenditure on construction to 1st Jany., 1863.	Cost of repairs and management for 1862.
<i>Canals.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Welland.....	52454 82	456 00	4719469 58	61250 22
<i>St. Lawrence Canals, viz :</i>				
Lachine.....	87020 52	.....	2106487 60	22993 73
Beauharnois.....	991 43	338 00	1592260 81	15870 41
Cornwall.....	642 09	.....	466687 83	12674 68
Williamsburg.....	.....	.....	1089739 93	11576 97
Junction.....	.....	.....	230796 11	.....
General expenditure.....	293 83	.....	74727 95	.....
Lock Gates.....	12070 62	.....	22865 22	.....
Chambly.....	.....	170 48	69406 76	16293 95
St. Ours.....	.....	.....	123137 65	2345 69
Ste. Anne's.....	.....	.....	114596 49	2218 27
Burlington Bay Canal.....	.....	.....	291044 49	100 00
<i>Slides and Dams, &c.</i>				
Ottawa.....	43232 65	11000 00	689811 51	15752 35
St. Maurice.....	2911 69	.....	257880 48	12962 42
Trent, securing dams.....	195 00	.....	2380 34	200 00
Saguenay.....	.....	.....	41019 74	725 25
<i>Harbors.</i>				
Port Stanley.....	.....	.....	229377 48	.....
Union suspension bridge reconstruction.....	.....	.....	5266 60	.....
Total.....	199,812 65	11,964 48	12,126,956 57	174,963 94

J. BAINE,
Book-keeper.

DEPARTMENT OF PUBLIC WORKS, }
February, 1863.

No. 2.

STATEMENT of Public Works under the charge of this Department, incomplete and, as yet, unproductive, but on which tolls are to be levied as soon as they are available; shewing the expenditure thereon in 1862, on construction, and on repairs and management, and the total expenditure up to 1st January, 1863.

NAME OF WORKS.	Expenditure on Construction in 1862.	Repairs and Management during 1862.	Total expendi- ture to 1st January, 1863.
<i>Canals.</i>	\$ cts.	\$ cts.	\$ cts.
Chats Canal.....	.....	.....	373,191 96
Seugog inland navigation.....	742 83	736 06	479,760 73
	742 83	736 06	852,952 71

J. BAINE,
Book-keeper.

DEPARTMENT OF PUBLIC WORKS, }
February, 1863.

No. 8.

STATEMENT of the several public works and buildings in course of construction under the charge of this department, yielding no direct revenue, but in use for the public service, and authorised by Legislative appropriations; shewing the amount expended thereon during the year 1862, and the total outlay upon them up to 1st January, 1863; also the amount expended in repairs and maintenance for the same period.

WORKS.	Total outlay up to 1st January, 1862.	Expenditure during 1862.	Total outlay up to 1st January, 1863.
	\$ cts.	\$ cts.	\$ cts.
Parliament Buildings, repairs, Toronto }	274815 05		
Government House do }			
Custom House do do }	5104 16		
Post Office do do }	28066 07		
Observatory do do }	13884 65		
Female Lunatic Asylum do do }	9966 83		
Osgoode Hall do do }	159 30		
Gun Sheds do do }	3679 23		
Barracks, repairs do do }	657 69		
Railway Inspector's Office do do }	525 62		
Mechanics' Institute, completing Building do do }	16000 00		
Custom House do do Hamilton }	46587 61		
Post Office do do do }	52825 42		
Gun Sheds do do do }	5566 67		
Post Office do do do London }	39122 76	531 75	39454 51
Custom House do do do Kingston }	45010 24		
Post Office do do do do }	39647 12		
Lunatic Asylum and Gaol do do do }	4293 92		
Public Buildings do do do Ottawa }	1088344 40	17739 33	1106083 73
Court House do do do Montreal }	306877 13		
do extraordinary repairs do do }	22237 62	4141 31	26378 93
Custom House repairs do do do }	1257 63		
Gaol do do do do }	1767 45	300 00	2067 45
Post Office do do do do }	3037 97		
Normal School do do do do }	7335 73	1748 76	9084 49
Armoury do do do do }	856 68		
Marine Hospital do do do Quebec }	94638 21	656 47	95494 68
Custom House do do do do }	368008 50		
Gun Sheds do do do do }	4546 42		
Court House do do do do }	1226 37	45 32	1271 69
Post Office and Parliamentary Buildings do do do do }	59891 18		
do additions thereto do do do }	1623 59		
Spencer Wood repairs do do do do }	4299 35		
do re-construction do do do do }		14265 76	14265 76
Governor General's residence, in consequence of fire at Spencer Wood in 1861 do do do do }	9991 67		
Observatory repairs do do do do }	318 77		
Normal School do do do do }	7181 06		
Gaol repairs do do do do }	712 16	172 09	884 25
New Gaol do do do do }	41093 31	36286 06	77381 37
Gaols and Court Houses, C. E. do do do do }	35441 44		
Gaols and Court Houses, C. E., 20 Vic., ch 44 do do do do }	364764 29	73298 75	438063 04
Aylmer Court House repairs do do do do }	525 65		
Kamouraska Gaol do do do do }	11739 92	178 78	11918 70
Sherbrooke Court House and Gaol repairs do do do do }	3558 65	56 23	3614 88
Three Rivers Court House repairs do do do do }	4096 62		
St. Hyacinthe do do do do }	541 42		
Dépot at Anticosti do do do do }	47 82		
Reuts, repairs, and maintenance do do do do }	323338 74	42801 97	366140 71
Governor General's Residence, St. Louis Street do do do do }			
Court House and Gaol, Algoma do do do do }	316 79	453 00	769 79
Gaol at Percé do do do do }	343 85		
Carried over		241381 43	

No. 3.—STATEMENT of Public Works, &c.—Continued.

WORKS.	Total outlay up to 1st January, 1862.	Expenditure during the year 1862.	Total outlay up to 1st January, 1863.
	\$ cts.	\$ cts.	\$ cts.
Brought forward		241331 42	
<i>Light Houses.</i>			
Light Houses at Quebec	398503 55		
Light House apparatus, Quebec	54502 16		
Light Houses (New), Quebec	34953 03	8471 83	43424 86
Point Pelée Light House	60550 47	8458 62	67009 09
Snake Island Light House	10430 04		
Bay of Quinté Light House	108 16		
Light Houses, Lake Huron	147614 75		
Light House apparatus, Lake Huron	74949 16		
Floating Lights above Machine	26397 93		
Gaspé Bay and Harbor Buoys	499 82		
Inland Lake and River Lights	6073 79	1077 50	7151 29
Father Point Light House	1453 61		
Ottawa River Navigation	3642 54		
<i>Roads.</i>			
Canada and New Brunswick	175158 56	16091 91	191250 47
Metapedia, South	28981 55	523 89	29505 44
do North	16392 59		
Eastern Canada and New Brunswick Road, by the Meta- pedia		27055 71	27055 71
Malbait and Grande Baie	10123 82	1832 91	11956 73
St. Denis and Cap Chate	21291 74	1912 64	23204 38
Escomains	1537 50	1011 00	2548 50
Marmora	4000 00		
Garrison Road, Toronto	1600 50		
Gaspé Road	12348 76	3727 77	16076 53
Côteau and Province Line Road	1482 01		
Cornwall		510 22	510 22
Batiscan Bridge repairs		642 00	642 00
<i>Harbors and Piers.</i>			
Port Bruce	6267 47		
Lake Huron	97448 82		
L'Orignal	2000 00		
Pier at St. Ansel	87 97	1920 00	2007 97
Landing Piers	768971 02		
Repairs of Piers	10630 70	4734 26	15364 96
Pier at Port aux Quilles	163 45		
Dredging Narrows, and New Bridge, Lake Simcoe	10138 30		
Dredging at Porton and Presque Isle	3850 20	£193 84	9030 04
Dredging operations	1078 56	1230 00	2308 56
Dredging Vessels, Steam Pumps, &c.	3155 08	63 31	3218 39
Dredging at St. Clair Flats	19994 45		
Kiebelieu Rapids Improvements (St. Anne de la Pêrade)	13713 99		
North River and Petite Nation Bridge Improvements	4254 11		
River Thames Navigation Improvements	3521 42		
		\$323786 77	

J. BAINÉ,
Bookkeeper

DEPARTMENT OF PUBLIC WORKS, }
February, 1863. }

No. 4.

STATEMENT of expenditure on certain Miscellaneous Services under this Department during the year 1862.

	\$	cts.
Provincial Steamers.....	34,165	78
Tug Boats, Upper St. Lawrence.....	20,000	00
Surveys generally.....	4,939	59
Arbitrations, Awards, &c.....	24,663	02
Removal to Quebec in 1859.....	869	50
Advertising Sale of Provincial Steamers.....	21	72
Visit of H. R. H. Prince of Wales.....	1,106	92
Do Prince Alfred	1,100	00
Contingencies of Department for Engineering Branch.....	2,568	65
Advertising Hydraulic Lots, Rideau Canal.....	10	98
Militia Expenses for drilling purposes.....	1,937	19
Services of Steamer Advance in 1859.....	2,070	00
Survey, Harbors of Refuge, Lake Huron	955	30
Reformatory, Lower Canada, St. Vincent de Paul.....	18,600	77
Indemnity to Heirs of late Mrs. Delmont.....	1,000	00
Services of Steamer conveying H. E. Governor General to Montreal.....	1,600	00
Do do Lord Mulgrave from Shediac to Quebec.....	2,800	00
	118,409	42
Less ;		
Included in No. 1 Statement and also under the head of Arbitrations	11,964	48
	106,444	94

J. BAINE,
Book-keeper.

DEPARTMENT OF PUBLIC WORKS, }
February, 1863.

No. 5.

STATEMENT of the expenditure incurred under this Department for the repairs and management of the Ordnance Canals for the year 1862.

NAME.	Extraordinary repairs.	Ordinary repairs and Management.	Total expenditure.
	\$	\$	\$
	cts.	cts.	cts.
Rideau Canal.....		23,232 16	23,232 16
Carillon and Grenville Canal.....		7,425 68	7,425 68
Lower Brewer's.....	1,445 85		1,445 85
Lock Gates for Rideau Canal.....	1,885 32		1,885 32
Black rapids dam	5,081 09		5,081 09
Breach at Hogsback.....	29,482 48		29,482 48
Carillon and Grenville Improvements.....	356 75		356 75
	38,251 49	30,657 84	68,909 33

DEPARTMENT OF PUBLIC WORKS, }
February, 1863.

J. BAINE,
Book-keeper.

No. 6

A DETAILED statement of the expenditure incurred in repairs and maintenance of Provincial Light Houses, for the year 1862, under this department.

Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
		\$ cts.	\$ cts.	\$ cts.
Machine Pier.....	John Norton.....	385 00	116 50	501 50
Light Ship No. 1.....	Pierre Landré.....	250 00	107 37	357 37
Do No. 2.....	Benjamin Picard.....	250 00	96 00	346 00
Do No. 3.....	Joseph Meloche.....	225 00	136 40	361 40
Beaubarnois.....	Peter Shannon.....	435 00	219 70	654 70
Grosse Point.....	A. McDonald.....	175 00	67 00	242 00
Mackie's Point.....	E. S. Johnson.....	435 00	123 13	558 13
Cherry Island.....	G. H. Johnson.....	250 00	295 87	545 87
Do Light Ship.....	Thomas Hill.....	375 00	109 35	484 35
Lancaster Pier.....	Richard Elliott.....	140 00	295 00	435 00
Cole Shoal.....	Joseph Austin.....	120 00	72 30	192 30
Grenadier Island.....	J. Wallace.....	140 00	66 90	206 90
Lindoe Island.....	James McDonald.....	260 00	89 20	349 20
Gananoque Narrows.....				
Jack Straw Shoals.....	Daniel Bryant.....	500 00	112 38	612 38
Spectacle Shoal.....	Joseph Mervin.....	120 00	09 05	129 05
Red Horse Rock.....	Thomas Kilty.....	226 00		
Burnt Island.....	Robert Gillespie.....	123 62	137 80	261 42
Wolfe Island.....	L. Herchmer.....	435 00	316 98	751 98
Snake Island.....	John Dunlop.....	435 00	603 42	1038 42
Nine Mile Point.....	Joseph Swetman.....	510 00	890 10	1400 10
False Ducks.....	W. A. Palin.....	435 00	511 75	946 75
Point Peter.....	Samuel Wilson.....	435 00	1060 42	1495 42
Scotch Bonnet.....	Wm. Swetman, Sr.....	325 00	927 77	1252 77
Presqu' Isle.....	Wm. Swetman, Jr.....	250 00	128 55	378 55
Do Range Light.....	George Roddick.....	435 00	650 10	1085 10
Gull Island.....	George Durnan.....	435 00	503 82	938 82
Gibraltar Point.....	George Thompson.....	300 00	82 90	382 90
Burlington Bay.....	Jonathan Woodall.....	400 00	430 43	830 43
Port Dalhousie.....	James Fortier.....	400 00	742 07	1142 07
Port Colborne.....	John Burgess.....	435 00	298 97	733 97
Mohawk Island.....	Peter Baikie.....	435 00	79 67	514 67
Port Maitland.....			79 40	79 40
Port Dover.....	H. H. Clarke.....	326 25	729 70	1055 95
Long Point.....	Alexander Sutherland.....	320 00	60 88	380 88
Port Burwell.....	Richard Ead.....	144 00	123 29	267 29
Port Stanley.....	P. McIntyre.....	435 00		
Point Pelée.....	W. Wadsworth.....	325 00	962 57	1287 57
Point Pelée.....	James Cummins.....	543 75	731 65	1275 40
Bois Blanc.....	James Hackett.....	435 00	493 15	928 15
River Thames.....	Thomas Cartier.....	435 00	160 37	595 37
Goderich.....	Humphrey Fidler.....	335 00	277 18	612 18
Point Clark.....	John Young.....	435 00	405 05	840 05
Chantry Island.....	D. McG. Lambert.....	328 25	562 45	890 70
Ile of Coves.....	D. McBeath.....	435 00		
Griffith Island.....	Wm. McBeath.....	300 00	659 67	959 67
Griffith Island.....	Vesey C. Hill.....	435 00	261 98	696 98
Nottawasaga Island.....	George Collins.....	435 00	581 20	1016 20
Christian Island.....	E. Collins.....	75 00		
Green Shoal.....	Wm. Hoare.....	435 00	411 67	846 67
Point Claire, No. 1.....	D. Thomas.....	245 00	66 58	311 58
Do No. 2.....	Arsonne Glode.....	247 50	179 02	426 52
	Samuel Biron.....	245 00	69 91	314 91
Carried over.....		17988 37	10136 32	28124 69

No. 6.—STATEMENT of the expenditure incurred in repairs and maintenance of Provincial light houses, for the year 1861, under this department.— *Continued.*

	Total.
	\$ cts.
Brought forward.....	33162 69
Management, salary of Superintendent and his travelling expenses, freight and charter of Steamers delivering supplies, advertising, &c.....	5136 41
Placing buoys and light ships.....	718 83
Purchase of land for light house keepers' dwellings	168 10
Cape and Amherst Harbors Maintenance.....	100 00
Supplies on hand in store.....	750 00
	\$40,036 03

J. BAINE,
Book-keeper.

DEPARTMENT OF PUBLIC WORKS, }
February, 1863.

No. 7

STATEMENT shewing the total amount expended under the department of Public Works during the year 1862, as detailed in the foregoing statements, numbered 1, 2, 3, 4, 5 and 6.

STATEMENT.	Repairs and Maintenance.	Construction.	Miscellaneous.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
No. 1.....	174963 94	211777 13	386741 07
2.....	1478 89	1478 89
3.....	113121 33	210667 44	323788 77
4.....	106444 94	106444 94
5.....	68909 33	68909 33
6.....	40036 03	40036 03
Total.....	398,509 52	422,444 57	106,444 94	927,399 03

J. BAINE,
Book-keeper.

DEPARTMENT OF PUBLIC WORKS, }
February, 1863.

APPENDIX B.

WELLAND CANAL OFFICE,
ST. CATHERINES, December 20th, 1862.

SIR,—In compliance with the instructions conveyed to me in your letter (No. 43,601) of the 11th instant, I have the honor to submit my annual report on the works under my charge.

The canal was opened on the 15th April, on which day, vessels passed through from lake to lake. A day or two previous, this was quite unexpected, from the firm state of the ice then in the canal, which obstacle was removed by means of an ice-breaker.

The navigation has been maintained throughout the season without interruptions, except in a few instances, when the delays were but trifling, caused by the shifting of lock-gates, or making repairs to the bridges, and the raising of the lower sill of the lock at Port Robinson.

On the 6th of December, the canal was closed by ice, the severity of the weather being such that it was in many places upwards of five inches in thickness, rendering it improbable that there would be any further passages of vessels. Subsequently the weather moderating, and there being a number of vessels yet to be passed through, I was enabled to have the channel opened by the ice-breaker, which I had received the necessary authority for putting in an efficient state, thereby furthering the progress of vessels that must have otherwise been detained. The navigation was closed on the 15th December.

REPAIRS AND MANAGEMENT.

Previous to opening the canal last spring, the repairs authorized upon the lock-gates, bridges, &c., &c., &c., were made, and the removal of bars from the bottom of the canal, clearing out the locks, &c., &c., &c., affected, thereby rendering the navigation thoroughly efficient, and lessening the probability of any detention.

The work of staunching the Dunnville dam has been completed, but too late in the season to thoroughly test the benefits to be derived therefrom. From the previous state of this work, there can be no doubt, much saving of water will be effected (by the staunching) when there is a scant supply.

WORK OF CONSTRUCTION.

The progress made with the work of deepening and widening the upper level of the Canal, for the purpose of admitting the water of Lake Erie, as the summit level, has not been as satisfactory as was anticipated in my previous report. This work has been steadily prosecuted throughout the season, but the difficulty experienced by the contractor in wasting the excavations has much retarded his operations. The appropriation required for carrying on this work next year will be \$30,000.

The work of raising and strengthening the embankments referred to in my last report has been completed, so far as appeared necessary, to secure the passage of vessels with the greatest draught of water that the canal admits of. But owing to the great traffic, the towing-paths became much worn and wasted by the constant travel of the two horses over them, and, in consequence, will annually require some outlay for the maintenance.

The necessity for the construction of another towing path, from Hurst's to Marlatt's bridge, is annually made more apparent, by the frequent delays experienced by vessels. Its estimated cost is \$18,100. The advantages to be derived from this improvement sufficiently justify my strongly recommending it to such favorable consideration of the Department as will authorise its being speedily proceeded with.

I herewith submit the following Schedules, by reference to which may be ascertained the various annual expenditures upon this work, the collections of the revenue, &c., &c., &c.

Schedules Nos. 1 and 2, (not printed) shew the several appropriations made by the Legislature, and the expenditure upon the works to 1st December, 1862. Of the appropriations, there has been expended this year \$52,541.40, leaving a balance of \$26,030.34 applicable for next year's operations, in addition to the sum of \$30,000 before alluded to.

Schedule No. 3 (not printed) gives the cost of the repairs and management of the canal this year. These expenditures are defrayed from the canal revenue.

The cost of repairs is.....	\$22,120.73
Do do management.....	39,129.49
Total for repairs and management.....	<u>\$61,250.22</u>

The cost of the repairs is \$2,120.73 in excess of the amount furnished in the approximate estimate accompanying my report on this work last year. This excess has been incurred in making the following repairs not then anticipated, viz :

For repairs of the damages done to the lock-gates, bridges, &c., by vessels.....	\$ 698.00
For repairs of the damage by fire to the light house at Port Dalhousie..	512.82
For repairs of the damages done to the Pier at Port Dalhousie by a vessel.....	76.00
For putting in a dam to shut off water from the beach at Sulphur Creek weir.....	362.40
For repairs and strengthening Sulphur Creek weir.....	1,028.32
For putting down the sill at Port Robinson lock.....	407.75
For repairs of the scow used as an ice-breaker.....	373.53
For expenses of working scow, breaking ice to enable vessels to pass...	297.64
Total.....	<u>\$3,756.46</u>

The cost of the works not included in the estimate is \$3,756.46; had there not arisen necessity for their execution subsequent to my furnishing the estimates, the expenditure on repairs would have been \$1,635.73 less.

Schedule No. 4 shews the water-power and other property leased on this canal, with erections &c.

The annual rent for property and water-power leased is \$8,999.10.

The amount collected in 1862 is \$7,363.90.

The arrears remaining due to 1st December, \$6,801.74.

The annual rent from the property and water power is shewn to be \$8,999.10; as this sum includes several rentals the holders of some of which have failed, and premises of these and others being in most cases either abandoned or burnt, or not in use, the collection of the rents cannot be enforced in the usual way, by shutting off the water. Therefore they must be in a great measure looked upon as unavailable. Upon the holdings, the annual rent is shewn to be \$1,480.34 (marked A, upon Schedule); included in this sum is the annual rental of premises which have been abandoned, amounting to \$563 (marked A, B, in Schedule); and \$3,239.50, for arrears, which may be set off as bad, there being no probability of their being collected. The others shew an annual rental of \$917.24, and the arrears amount to \$1,914.38, (marked A, C, on Schedule.) These premises have been burnt or are not in use, and the holders decline to pay

rent, as they are not using water. Until these privileges are resumed, there will be no means of enforcing collection in the usual way by stoppage of water.

Steps have been taken towards the collection of the residue of the arrears, and, where practicable, the water has been shut off.

Schedule No. 5, shews the land &c.. disposed of, not being required for canal purposes. The solicitor, Mr. Miller, has been instructed to proceed with the collection of the arrears.

Schedule No. 6, gives a list of the vessels &c., upon which penalties have been imposed, for committing breaches of the canal regulations, with the amounts collected.

Schedule No. 7, (not printed) gives an approximate estimate of the probable cost of making the ordinary canal repairs for 1863, amounting to \$14,500.

Appended are statements shewing the revenue collected and number of vessels passed through the canal for several years, being an increase of 18 per cent in the revenue, and 18½ per cent in the number of vessels, over last year.

Certain deductions are to be made from the revenue collected, in accordance with the policy proclaimed, that 90 per cent of the tolls would be refunded upon all shipments through the canal to Canadian Ports. The object of the promoters of this scheme appeared to be, to divert the trade to these ports, and thereby increase the carrying trade of the Province. It is true that since its adoption the trade has materially increased, but this is due more to its prosperity than to the policy, as the amount that would be exacted as tolls from the public works is too small to divert shipments from other routes. By reimposing the tolls, a large revenue would be derived from the public works, without embarrassing shippers. The state of the Finances of the Province appear to afford sufficient reason for its adoption.

I have the honor to be, sir, your obedient servant,
(Signed,) S. D. WOODRUFF.

WELLAND CANAL.

TABLE of its revenues for the last three years.

Port of Collection.	1860	1861	1862
Colbourne.....	\$116,033.55	\$174,474.27	\$205,061.81
Robinsen.....	3,502.78	4,775.37	6,373.06
Maitland.....	1,685.31	6,912.37	1,756.17
Dunnville.....	5,261.40	5,918.93	5,337.81
St. Catherines.....	1,259.71	1,412.10	1,527.43
Dalhousie.....	37,477.90	36,276.45	51,327.99
Collected on rents.....	\$165,220.65	\$229,769.49	\$271,384.27
Do lands &c., sold.....	\$ 7,686.97	8,967.20	7,363.90
Do fines and damages..	1,737.07	25.00	
	2,116.10	2,267.80	573.00
	\$176,760.79	\$241,029.49	\$279,321.17

NUMBER OF SAILING VESSELS AND STEAMERS WHICH HAVE PASSED THROUGH THE CANAL DURING THE LAST NINE YEARS.

In 1854.....	3,690.
" 1855.....	3,816.
" 1856.....	3,885.
" 1857.....	3,604.
" 1858.....	3,726.
" 1859.....	2,589.
" 1860.....	3,744.
" 1861.....	4,315.
" 1862.....	4,899.

WELLAND CANAL.

SCHEDULES 4 TO 6 INCLUSIVE.

Annual Rents of Water Power—Lands Sold—Fines and Damages, etc.

WELLAND CANAL.

SCHEDULE No. 4.—Statement showing the annual rents of water power leased, and the rents of other property situated on the line of the Welland Canal, with yearly rent, together with arrears of rent, the amounts of payments made in 1862, with the balance due the 1st December, 1862.

Where situated.	Owners.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent, with Arrears, to 1st July, 1862.	Amount of Payments to 1st Dec., 1862.	Balances due on Rents to 1st Dec., 1862.	REMARKS.
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	
Port Dalhousie ...	Robert Lawrie & Co....	R. Lawrie & Co.....	1st Run Stones	60 00				
			2d do	50 00				
			3d do at \$50 each..	50 00				
			Corn Cracker.....	10 00				
			Ground Rent	20 00				
			Interest on cost of Flume....	7 30				
				197 30	197 30	197 30		
Do	R. & J. Lawrie	R. & J. Lawrie	1st Run Stones	60 00				
			3d do	150 00				
			Ground Rent	20 00				
			Interest on cost of Flume....	10 00				
				240 00	240 00	240 00		
Do	R. & J. Lawrie	R. & J. Lawrie	Lot 1 acre land	20 00	20 00	20 00		
Do	Donaldson & Andrews	formerly R. Morrison	1st Saw.....	80 00				
			1 Circular Saw	16 00				
			Ground Rent	20 00				
			Interest on cost of Flume....	5 00				
				121 00	286 50	226 00	60 50	
Do	Alexander Muir	A. Muir.....	Floating Dock, 76 Dry Dock, 100.....	176 00	176 00	176 00		

Do		Donaldson & Andrews	Donalds'n & Andrews	Dry Dock & Service Grounds	100 00	150 00	150 00	.....
Do		James Maver.....	John Johnson.....	Lot.....	20 00	.....	.....	90 00
Do		George H. Clark.....	G. A. Clark	Wharf.....	80 00	120 00	40 00	80 00
Lock No. 2		Bank of U. Canal la.....	formly J.L. Ranney	1st Run Stones	60 00			
				4 do (at \$50 each)....	200 00			
					260 00	910 00	.....	910 00
St. Catharines.....		St. Catharine's Water Power Co.....	St. Catharine's Water Power Co.....	Surp's water from Lock 11 to 3	500 00	500 00	500 00	.....
	Do	Norris & Neelan.....	formerly C. Phelps..	Special lease.....	150 00	150 00	150 00	.....
Lock No. 4.....		do do	do do	Wharf	40 00	40 00	40 00	.....
	Lock No. 5.....	Richard Collier.....	H. H. Collier	1st Saw	80 00			
Small Machinery, 2d saw				60 00				
				Ground Rent	20 00			
				Interest on cost of Flume....	7 66			
					167 66	167 66	167 66	.....
Lock No. 10.....	John Smith & Co	formerly S. Towers..	1st Run Stones	60 00				
			2d do	50 00				
			Corn Cracker.....	10 00				
			Ground Rent	20 00				
				140 00	140 00	140 00	.....	.....
Locks No. 22 to 11	Wel'nd Canal Loan Co.	W'd Canal Loan Co.	Surplus water passing thro' Welland Canal, with stipulations	480 00	480 00	480 00	.....	.....
			Water of waste weirs, Locks 12, 13, and 14, to supply Cotton Factory	240 00	270 00	240 00	\$30 in arrears for repairs of flume leading to factory.	
Locks 12, 13 & 14	Gordon & Mackay	Gordon & Mackay ..	1st Run Stones with cracker..	60 00				
			Additional power	80 00				
			Ground Rent	20 00				
				\$160 00	160 00	160 00	.....	.....
Lock No. 16.....	John Brown	John Brown.....	Carried over.....	3091 96	4097 46	2926 96	1170 50	

WELLAND CANAL.

SCHEDULE No. 4.--Statement shewing the annual rents of water power, leased, &c.---(Continued.)

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent. \$ cts.	Amount of Rent with Arrears to 1st July, 1861. \$ cts.	Amount of Payments to 1st Dec., 1862. \$ cts.	Balance due on Rents to 1st. Decr., 1862. \$ cts.	REMARKS.
Lock No. 20.....	Wm. B. Hendershot...	W. B. Hendershot...	Carried forward	3091 96	4097 46	2926 96	1170 50	
			1st Saw	80 00				
			2nd Saw	60 00				
			1 Circ Saw for edging Boards	16 00				
			Ground Rent.....	20 00				
			Interest on cost of Flume ...	5 00				
				181 00	362 00		362 00	
Lock No. 21.....	William Beaty.....	William Beaty	1st Saw	80 00				
			2nd Saw	60 00				
			3 Circular Saws, at \$16 each	48 00				
			Ground Rent.....	20 00				
			Interest on cost of Flume....	8 00				
				216 00	216 00	216 00		
Lock No. 22.....	do	do	Wheel for grinding bark, &c..	60 00				
			Interest on cost of Flume....	3 60				
				63 60	63 60	63 60		
Lock No. 23.....	Commercial Bank.....	formerly W.H. Ward	2 Planing Machines, and 3	50 00	25 00		25 00	
			Circular Saws					
Lock No. 23.....	John McDonagh.....	do	1st Saw.....	80 00				
			2nd Saw.....	60 00				
			Interest on cost of Flume....	6 00				
				146 00	146 00	146 00		
Lock No. 23.....	John Brown.....	John Brown	Wharf	40 00	40 00	40 00		

Lock No. 24.....	Bank of Upper Canada, formerly J. Keefer..	1st Run Stores	60 00						
		2nd, 3rd and 4th at \$50 each.	150 00						
		Interest on cost of Flume....	12 00						
			222 00	222 00	222 00				
do	John Brown.....	1st Run Stones.....	60 00						
		2nd do	50 00						
		Ground Rent	20 00						
			130 00						
do	D. Thompson's estate..	1st Run Stones	60 00						
		2nd and 3rd do, at \$50 each..	100 00						
			160 00						
Lock No. 25.....	J. Woodward's estate..	1st Run Stones	6 00						
		2nd and 3rd do, at \$50 each..	100 00						
			160 00						
			100 00						
Thorold.....	Nutty & Woodward ...	Cotton Factory, use of water..							
Allenburgh.....	Norris & Neelon.....	Assignees	60 00						
		formerly Wright & Duncan	100 00						
			50 00						
			60 67						
			270 67						
Allenburgh	Wm. H. Merritt, jr ...	1st Saw	80 00						
		Interest on cost of Flume....	7 10						
			87 10						
do	J. & A. Bowman	Water equal to 1 Run Stone..	60 00						
		Interest on cost of Flume.....	6 00						
			66 00						
do	Tucker & Rannie.....	Saw Mill	600 00						
do	William Pennock.....	Shingle Factory	66 00						
Port Robenson ...	J. & J. Abbey	Dry Dock.....	150 00						
			5800 33	7240 84	4788 33	2452 51			
		Carried over							

{ 1 year's rent remitted by let-
ter of authority, No. 43,436,
Nov. 24, 1862.

(a.) Mill burnt.
(a. c.)

(a.) { Mill shut down, and no
(a. c.) { water used for some time.

(a.) No water used.

(a.) { Premises abandoned.
(a. b.) { No water used, nor
rent carried out
since 1859.

WELLAND CANAL.

SCHEDULE No. 4.—Statement shewing the annual rents of water power leased, &c.—Continued.

Where situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Rent with Arrears to 1st July, 1862.	Amount of payments. to 1st Dec., 1862.	Balance due on Rent to 1st Dec., 1862.	REMARKS.
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	
Port Robinson...	J. & J. Abbey.....	J. & J. Abbey.....	Carried forward.....	5800 33	7240 84	4788 33	2452 51	
do	D. E. McFarland, formerly Donald and McFarland }	Dry Dock.....	1st Run Stones.....	79 20	396 00	.....	396 00	
			Ground Rent and House do	60 00				
			Interest on cost of Flume....	20 00				
				6 00				
do	D. E. McFarland for merly R. Band & Co.		1st Run Stones.....	86 00	86 00	.....	86 00	
			2nd and 3rd do at 50 \$each..	60 00				
			Ground Rent of Mill.....	100 00				
			do of store house and wharf.	20 00				
			Interest on cost of Flume....	20 00				
				6 00				
				206 00				
Merrittville	W. Thompson, formerly by Dunlop & Seely..		1st Run Stones.....	206 00	206 00	.....	.....
			2nd and 3rd do at \$50 each..	60 00				
			Other Machinery.....	100 00				
			Interest on cost of Flume...	50 00				
				6 00				
				216 00				
do	Dunlop & Seely.....	Moses Betts.....	1st Saw.....	432 00	432 00	216 00	216 00	
			3 Circular Saws at \$16 each..	80 00				
			Ground Rent.....	48 00				
			Interest on cost of Flume....	20 00				
				8 00				
				156 00	156 00	156 00	.....

			Interest on cost of Flume.....	10 00						(a.) (a.b.)	
do	Ebenezer Seely.....	Moses Betts.....	Old Aqueduct for Store house and Wharf.....	214 00		1177 00	.....	1177 00			{ Lessees left country, premises abandoned, machinery removed, and rent not carried forward since 1859.
do	Moses Cook.....	D. Cooper.....	1st Run Stone..... 2nd and 3rd do at \$50 each.. Ground Rent..... Interest on cost of Flume.....	20 00 60 00 100 00 20 00 12 00		21 72	.....	21 72			
do	Eli Mead.....		Wharf Lot.....	192 00		192 00	192 00				
do	Alpheus Sherwood.....		Wharf Lot.....	25 00		77 50	.....	77 50			
Junction	John A. Hellenes.....	J. A. Hellenes.	Wharf Lot.....	25 00		87 50	.....	87 50			{ Wharf abandoned and removed in course of excavation made in enlarging Canal.
Marshville	John Graybiel.....	M. Graybiel.....	2 Runs of Stone, 1 Saw and Ground Rent.....	160 00		112 50	.....	112 50			
Broadcreek.....	L McCallum.....	L. McCallum.....	1 Upright Saw..... 2 Circular Saws at \$16 each. Ground Rent..... Interest on cost of Flume....	80 00 32 00 20 00 11 00		160 00	160 00				
Port Maitland....	Imlack & Hicks.....	do	1st Run Stones..... 2nd do Ground Rent Interest on cost of Flume.....	143 00 60 00 50 00 20 00 8 00		143 00	143 00				
Dunnville... ..	Jacob Turner.....	Richd. Chambers...	1st Run Stones..... 2nd do 1st Saw 2nd do Ground Rent.....	138 00 60 00 50 00 80 00 60 00 20 00		759 00	.....	759 00		{ Mill burnt, Lessees failed, and premises abandoned.	
			Carried over.....	270 06		11,247 06	5,861 33		5,385 73		
				7,755 53							

WELLAND CANAL.

SCHEDULE No. 4.—Statement showing the Annual Rents of Water Power leased, &c.—Continued.

as Situated.	OWNERS.	Owners or Occupants.	Description of Machinery.	Yearly Rent.	Amount of Amount of Rent, with Payments Arrears, to 1st July, 1862.	\$ cts.	Amount of Payments to 1st Dec., 1862.	\$ cts.	Balance due on Rents to 1st Dec., 1862.	REMARKS.
			Brought forward.....	\$ cts. 7755 53	11247 96		5361 33	5365 73		
			Less 1, until Lake Erie level be adopted.....	90 00						
				139 90						
Dumfries.....	Samuel Darling.....	S. Darling.....	1st Run Stone,	60 00		180 00	180 00			
			2nd do	50 00						
			Ground Rent.....	20 00						
				130 00						
			Less 1, until Lake Erie level be adopted.....	43 23						
do	L. J. Weatherly	A. B. Carpenter.....	3 Carding Machines, 1 Pul- ling Mill, 1 Loom and Spin- ner and 2 Turning Lathes..	86 07	86 07		86 07			
			Less 1, until Lake Erie level be adopted.....	86 00						
				36 66						
				53 34						
do	McIndoe & Gordon..	form'y H Mittlebarger	1 Saw	80 00						
			Ground Rent.....	29 00						
				53 34						

do	Richard A. Clarke..	do Chisholm & Minor	1 Circular Saw, since added. Yearly to be charged.....	10 07 77 34	77 34	77 34	.....
			1st Saw.....	80 00			
			2nd do	60 00			
			3 Circular Saws @ \$16 each	48 00			
			Ground Rent.....	20 00			
			Less 1, until Lake Erie level be adopted.....	208 00 69 33			
				138 67			
do	A. S. St. John.....	T. C. Street.....	1st Run Stones	60 00	316 34	316 34	.....
			2nd and 3d do @ \$50 each..	100 00			
			Ground Rent.....	20 00			
				180 00			
			Less 1, until Lake Erie level be adopted.....	60 00			
				120 00			
do	J. Brown and W. H. Merritt, jr	John Brown.....	1st Run Stones, with cracker. Ground Rent.....	80 00 20 00	960 00	960 00	(a.) { Mill burnt, and no Rent. a.b.) { Carried forward since 1st Jany., 1860.
			Interest on cost of same.....	13 00			
				113 00			
Haldimand.....	John Oldfield.....	John Oldfield.....	1st Saw.....	80 00	113 00	113 00	.....
			2nd do	60 00			
			1 Circular Saw	16 00			
			Ground Rent.....	20 00			
				176 00			
			Less 1, until Lake Erie level be adopted.....	58 66			
				117 34			
			Carried over.....	8371 89	13033 75	6688 02	6345 73

do	J. Beatty & R. Band..	J. Beatty's Estate...	1st Run Stone.....	60 00				
			2nd do	50 00				
			Ground Rent.....	20 00				
			Interest on cost of Flume.....	19 20				
				149 20		149 20		
Port Colborne....	H. K. Scholfield.....	Buffalo and L. H. Railway Company	Wharf Lot.....	25 00				
do	John Gordon.....	John Gordon.....	Wood Yard.....	25 00		62 50		62 50
Port Robinson....	John Donaldson for merly Robert Elliot.		Ground Rent of Store House.	8 00		37 50		37 50
Lock No. 25.....	John Brown.....	John Brown.....	1 Run of Stones with Cracker.	60 00		8 00	8 00	
			Ground Rent.....	20 00				
				80 00		80 00	80 00	
				8,999 10	14,165 64	7,363 90		6,801 74

(Signed,)

S. D. WOODRUFF,
Superintendent Welland Canal
 THOMAS ADAMS,
Paymaster and Clerk.

(Signed,)

WELLAND CANAL OFFICE, }
 St. Catharines, December 19th, 1862. }

WELLAND CANAL.

SCHEDULE No. 5.—Schedule of Lands on the Welland Canal sold to sundry persons, with the amount of Sales and Interest to 1st December, 1862, amount paid to 1st December, 1862, and the balance remaining due on the 1st December, 1862.

PURCHASERS.	Number of Lots.	Where Situated.	Quantity.	Amount of Sale.	Amount of Interest to 1st Decr., 1861.	Amount of Sale and Interest to 1st Decr., 1862.	Amount paid to 1st Decr., 1859.	Amount paid in 1862.	Balances due the 1st December, 1862.	Remarks.
James B. Benson, on behalf of Hydraulic Co.....			\$ cts. 8454 25	\$ cts. 5213 20	\$ cts. 13687 45	\$ cts. 3010 85	\$ cts.	11858 60	
Municipality of the County of Welland	Lots below Thorold.....	211 a. 1 r. 17 per.							
	Lands in Wainfleet..	10,796 acres	13912 00	8043 40	18955 40	3309 68		16445 84	
	do Humbertstone	2,048 do							
	do do	68 do							
	do do	...							
			21,866 25	11,358 60	22,622 85	5,370 41	.....	27,362 44	

(Signed,) S. D. WOODRUFF,
Superintendent Welland Canal.
(Signed,) THOMAS ADAMS,
Paymaster and Clerk.

WELLAND CANAL OFFICE, }
St. Catharines, December 20th, 1862. }

WELLAND CANAL

SCHEDULE No. 6.—Statement shewing the amount of Fines and Damages levied, the amount paid to the 1st December, 1862, and the balance remaining due on the 1st December, 1862.

Year.	Date.	Description of vessel, &c.	Name of Vessel, &c.	Amount of Fines levied.	Am't of Damages levied.	Amount paid to 1st Dec., 1862.	Amount remaining unpaid to 1st Dec., 1862.	Remarks.
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	
1861	April 22	Schooner	'S. H. Lathrop'		1800 00		1 000 00	Paid since 1st Dec., 1862.
"	" 30	Steamer	'St. Nicholas'	50 00	440 00		4 1800 00	
1860	" 30	Schooner	'Mohagan'		1244 00		953 00	
1860	May 30	do	'Amelia'		1246 00		1146 00	
1861	" 18	do	'Cuba'		10 00		10 00	
1862	" 14	do	'Henry Hagar'	10 00	11 00		22 00	
"	June 26	do	'Hyphon'		15 00		15 00	
"	April 18	do	'Persian'	10 00		10 00		
"	" 21	do	'Queen of the Lakes'	20 00		20 00		
"	" 28	do	'E. Seaville'		20 00	20 00		
"	May 8	Propeller	'Young America'		12 00	12 00		
"	" 13	Schooner	'Concord'		4 00	4 00		
"	" 15	do	'James Coleman'		25 00	25 00		
"	" 16	Propeller	'Vermont'		10 00	10 00		
"	" 16	Schooner	'Ocean Eagle'		50 00	50 00		
"	" 22	do	'Return'		20 00	20 00		
"	" 25	Raft	'A. M. Creeble'	15 00		15 00		
"	" 28	Schooner	'Flora Watson'	10 00		10 00		
"	" 28	Propeller	'Young America'	10 00		10 00		
"	" 29	Schooner	'Marquette'		10 00	10 00		
"	" 29	do	'Mary Morton'	10 00		10 00		
"	June 6	Raft	'Deceros'	5 00		5 00		
"	" 6	do	'Donaldson'	20 00		20 00		
"	" 6	Schooner	'A. P. Kirdland'		5 00	5 00		
"	" 19	Propeller	'Wisconsin'	10 00		10 00		
"	" 25	Schooner	'Bowersby'	20 00		20 00		
"	" 26	Propeller	'Kentucky'		10 00	10 00		
"	" 28	Schooner	'Game Cock'		50 00	50 00		
"	July 3	do	'Starlight'		15 00	15 00		
"	" 8	Propeller	'Young America'		10 00	10 00		
"	" 30	Schooner	'Prairie'	10 00		10 00		
"	Aug. 4	Propeller	'Granette Stato'		10 00	10 00		
"	" 11	Schooner	'Arabia'		11 00	11 00		
"	" 15	Propeller	'Bay State'	5 00		5 00		
"	" 15	Scow	'Cullier'		2 00	2 00		
"	" 19	Propeller	'Buckey'		50 00	50 00		
"	" 20	Schooner	'Bridget'		5 00	5 00		
"	Sept. 1	do	'J. P. Mack'	5 00		5 00		
"	" 9	do	'H. E. Mussey'		30 00	30 00		
"	" 11	Propeller	'Akron'		16 00	16 00		
"	Oct. 6	Schooner	'L. B. Fortler'		10 00	10 00		
"	" 6	Propeller	'Vermont'	5 00		5 00		
"	" 13	Brig.	'Queen of the North'		15 00	15 00		
"	" 20	Schooner	'E. S. J. Bemis'		10 00	10 00		
"	" 20	do	'Teresa'		75 00	75 00		Paid since 1st Dec., 1862.
"	" 29	do	'J. P. Mack'		20 00	20 00		
"	Nov. 6	Propeller	'Wasp'		20 00	20 00		
"	" 15	Scow	'Ark'	13 00		13 00		
"	" 30	Schooner	'T. Y. Avery'		30 00	30 00		
"	" 30	do	'Todd'	10 00		10 00		
				\$258 00	\$9592 00	\$573 00	\$9277 00	

(Signed,)

S. D. WOODRUFF,
Superintendent Welland Canal.

(Signed,)

THOMAS ADAMS,
Paymaster and Clerk.

WELLAND CANAL OFFICE,
St. CATHARINES, Dec. 29th, 1862.

APPENDIX C.

LACHINE CANAL OFFICE,
MONTREAL, 31ST DEC., 1862.

SIR,—In compliance with your instructions in Letter No. 43609, I beg herewith to submit my annual Report for the year ending the 31st of December, 1862, on the works under my charge, which consist of the following:—the Beauharnois, Lachine, Chambly, and Carillon and Grenville canals, and the locks and dams at St. Ours and Ste. Annes.

The Beauharnois and Lachine canals, separated by Lake St. Louis, form the two eastern sections of the artificial channel connected with the Upper St. Lawrence navigation, terminating at Montreal, where it connects with sea-going vessels trading with all countries. The Harbor of Montreal has been crowded to its full capacity during the past season with ships engaged principally in the produce trade, which receive their cargoes of grain from vessels navigating these canals, transhipped by floating elevators. Large shipments of flour are also made from the mills connected with the Lachine canal, as well as from Canada West and the Western States. This route forms the natural navigable channel through which the vast products of the north-west are now finding their way to market. This trade must increase and develop itself from year to year, in proportion to the facilities that may be provided for its accommodation.

The returns of trade connected with these canals for the past year show very satisfactory results, the capacity of the wharves and stores at Montreal having been taxed to their full extent. If this trade is to be fostered, and the capacity of this inland navigation developed and encouraged, facilities must be provided for its accommodation, with dispatch in its operations; loss of time in discharging and loading vessels being a heavy tax on the trade. In some instances (and I believe they are not unfrequent) vessels loaded with grain from the West are kept beating about in the canal and harbor, waiting for arrangements to be made for discharging them, longer than it requires for the Montreal Ocean Steamship Company to discharge and load one of their large vessels; for this the forwarders must be paid, which not only forms a heavy tax on the trade, but has the natural tendency of retarding its development. Locks Nos. 1 and 2, and Basin No. 1, at Montreal, are already adapted to 16 feet draft of water, and ground has long since been purchased for extending the basin accommodation on both sides of the canal. All that remains to be done is to carry out and complete the basin and wharfage schemes so long contemplated by the Department which will give 17 feet depth of water in Basin No. 2, and extend two new basins to St. Etienne street, leading to Point St. Charles Station, with which easy access can be had with the Grand Trunk Railway, to and from which sea-going vessels can be taken by small, powerful tugs, such as are now used in the Atlantic ports. These new basins can be lined on both sides with stores and elevators, where a large portion of the ships now visiting Montreal could be loaded in as many hours as it now takes days to accomplish. This may be fairly considered a Provincial Work, and is but the first step towards developing the trade that must eventually centre in this city, and can be made available in time to meet the wants of the trade; it should not, however, in any manner, interfere with, or retard any improvement that may have been decided upon for improving the harbor.

BEAUHARNOIS CANAL.

The sudden and unexpected thaw of April last flooded a large portion of the low lands in the vicinity of Lake St. Francis, raising the water in the Lake higher than was ever before known, causing several slight breaches in the dyke, through Hungry Bay, which have

since been repaired, and the lowest and most exposed portions raised. As this extreme high water was only of a few days duration, but little actual damage was caused by it. The work of raising the dyke was commenced too late in the season for completion, and will be resumed in the spring.

The dams at the head of the canal also suffered by the high water. The main or lower dam continues to sink in the centre, probably owing to wash and decay; they are now in good order.

The banks along the guard-lock and at the west end of the main dam have been raised and protected with stone, to guard against the possibility of damages arising from a recurrence of extreme high water in the lake. The main banks of the canal have been maintained as usual, several low points have been raised, and such portions as presented signs of weakness strengthened with stone; the banks above and below the regulating-weirs at Locks Nos. 11, 12, and 13 have also been protected with stone. There are still several low places on the long reach that must receive special attention next year.

The cost of maintaining the culverts and ditches has been much greater than usual, owing to the deep snow of winter, the high water last spring, and rains in the fall; they were all in good order at the end of the season.

The mechanical structures are generally in good order. The walls of several of the locks should be pointed, if possible, next April. Such repairs as were found necessary have been made to the gates and fixtures, all of which, as far as could be ascertained without drawing off the water, were in good working order at the close of navigation. The two pairs of upper spare gates that were being built at the date of report for 1861, were delivered in October. The lower gates broken out of Lock No. 13 in October, 1861, have been thoroughly repaired, making three full sets of spare gates now ready for use; at least one full set of these must be inserted early next season. There are also three pairs under contract which, it is thought, will be sufficient for the wants of 1863.

Several of the swing-bridges have received temporary repairs, they all require painting, and the bridge over Lock No. 14, wants a general overhauling during the winter; the farm and road bridges over the regulating-weirs may be considered in good order.

The masonry in the breast wall of the by wash at St. Timothy is badly shaken, and has been supported a great portion of the season by timber-braces, and must be rebuilt before opening the canal next spring; sand and lime have been provided for that purpose.

The superstructure of the wharf at the head of the canal must be rebuilt at season of low water next year. The trade for the past two seasons has seriously felt the want of more extensive accommodation below the lower entrance lock. This can easily be remedied by extending the south pier some three or four hundred feet, which is estimated to cost \$24 per lineal foot of pier.

Owing to the large amount of snow and ice, the water was not shut off until the 16th of April, when the necessary preparations were made for opening navigation, and the water was again let in on the 28th; the navigation was fully opened on the 30th, the full draft of water being successfully maintained during the next seven months, and was closed by ice on the 30th of November.

There was \$254 42 collected for fines and damages by order of the superintendent.

There has been \$9569.11 expended for working expenses, and \$5940 for repairs, which includes the repairs to lock-gates broken by the "Walter Shanly" in October, 1861. The ordinary repairs for 1863 are estimated at \$7720.

LACHINE CANAL.

The work of enlarging this canal through the Rock Cut, near Lachine, referred to in last year's report, was completed the beginning of May, and now forms the finest portion of the St. Lawrence canals; the narrowest portion of this cut being one hundred feet in width.

A new regulating-weir was also constructed during the winter, at Lock No. 4. These improvements have been highly beneficial to the trade, and have, to a great extent, removed the cause for the delays, so much complained of last year, above Lock No. 4.

The difficulties in passing the railway bridge have in a great measure been done away with by removing the slopes and improving the channel above and below the bridge, which was done by the Grand Trunk Railway Company.

The construction of the regulating-weir at Lock No. 3, for which plans and specifications were prepared and tenders received early last winter, should no longer be delayed. The difficulties of regulating water at this lock, and at the same time maintaining a uniform height for navigation, can only be removed by its construction.

The manufacturing establishments connected with this lock suffer great inconvenience for the want of a bridge. The construction of this bridge (plans for which have already been furnished) would relieve the Wellington Street bridge, and at the same time afford great accommodation to the western portion of the city.

The wood and timber trade at this port is now so great that it is quite impossible to afford suitable accommodation with the limited space that can be appropriated for that purpose. It is therefore all important that St. Gabriel Basin should be proceeded with at the earliest practicable moment. The construction of these basins would be a great relief to the local traffic in merchandise, which is yearly increasing to such an extent that it is found impossible to meet the wants of the trade with the present limited wharfage accommodation.

Serious and aggravated delays often occur at the lower entrance of the canal, which is often so crowded that all operations are frequently suspended,—the canal officers having no control over vessels below Lock No. 1. There is a pier connected with the east wall of this Lock that was built by the Department for the accommodation of canal craft, and has always been maintained by the Canal, over which the Harbor Commissioners now claim and exercise full control. This pier was built for, and should be left exclusively for the use of vessels entering and leaving the canal, and should be in no way interfered with by the Harbor Commissioner except to collect the dues; by this means the delay could, to a great extent, be avoided, without inconvenience to the harbor.

The Wellington Street and Lachine bridges were thoroughly overhauled last winter, and portions of the timber prepared for rebuilding Montreal bridge, which work will be proceeded with as soon as a safe crossing can be made on the ice; the other bridges will only require ordinary repairs.

The locks and fixtures are generally in good working order. The walls of Lock No. 2 were pointed, and the north wing of Lock No. 4 rebuilt, last April. A new pair of upper gates must be provided for the old graving-dock at Montreal, and a new breastwork at the upper end of the old lock at Lachine. There are five-and-a-half pairs of spare gates on hand, viz: one lower gate and one pair of upper gates for Locks Nos. 1 and 2; one pair of lower and two pairs of upper gates for Locks Nos. 3 and 4; and one pair of old repaired gates for the guard-lock, with one pair of lower gates under contract for Locks No. 1 and 2. One pair of spare gates should also be provided for the guard-lock.

The regulating-weirs are generally in good order. The new weir at Lock No. 4 was brought into use before the cement in the masonry had proper time to set; the entire south wall in the race will therefore require repointing in the spring. The action of the water below the weir is so great that it may be found necessary to face about one hundred feet of this wall with plank.

The accommodation for vessels to make fast below the guard lock at Lachine is very limited, which is the cause of much misunderstanding and trouble between the lockmaster and the masters of vessels. To remedy this, the north pier should be extended about three hundred feet on detached cribs with a continuous superstructure. Several of the guide cribs in the basin at Lachine were broken and damaged by vessels during the season, all of which have been repaired.

The banks, slope-walls, flour-sheds, and wharves have all been maintained in good order, and will only require ordinary repairs. The wall in front of the mills on the south side of Basin No. 2, was pointed and grouted last spring, which had the desired effect in checking the leakage to a great extent.

The dredge has been employed throughout the season in the removal of silt and sediment from the bottom of the canal and basins, and can still be employed to good advan-

tage for a portion of the incoming season. The dredge was thoroughly overhauled last spring and is now in very good order; the scows will require new decks.

The water was let into this canal on the fourth day of May, but owing to some delays in the removal of coffer-dams at Lachine, and in completing the fixtures connected with the sluice-gates in the new weir at Lock No. 4, the full draft of nine feet was not obtained until the 7th, after which navigation was maintained until the 6th day of December, when the canal was permanently closed for the season,—the only interruption being at Lock No. 2, which took place on Tuesday morning, the 5th of May, when one of the lower gates gave way while in the act of filling the lock, causing a detention at this lock of two-and-a-half days; most of the time being occupied in removing the old gate.

There has been \$9,413.90 collected on this canal, besides tolls and rents, viz:—

For fines and damages by order of the superintendent	\$	392.50	
“ Sale of old barge.....		18.50	
		<hr/>	\$ 411.00
“ Dues on firewood at Montreal.....		1374.84	
“ “ “ at Lachine.....		321 78	
		<hr/>	1696.62
“ “ Timber in Lachine Basin.....			1345.58
“ “ Old lock at Montreal used as graving-dock			630.25
“ “ Vessels wintering in canal.....			488.00
“ “ Use of flour sheds.....			3434.32
“ “ Vessels entering canal from lower ports...			1408.18
			<hr/>
			\$9413.90
			<hr/>
The tolls for 1862 amounted to.....			\$135,843.71
“ 1861 “			119,741.06
			<hr/>
Increase for 1862.....			\$ 16,102.65
			<hr/>
The cost of repairs for 1863 is estimated at.			\$ 10,540.00

a detailed copy of which will be forwarded herewith, with details of the amounts collected for fines and damages.

CHAMBLY CANAL.

This canal also suffered severely by the deep snow and sudden thaw of last winter, and the high water in the Richelieu River, which has unavoidably increased the expenditure for repairs beyond the amount estimated. The banks were frequently in danger of being swept away by the water from the creeks and ditches during the months of March and April. The wash from these ditches during winter often deposited mud to the depth of three feet in the bottom of the canal, which must be removed before opening the canal in the spring.

From the 20th of April to the 15th or 20th of May, the Richelieu river was, perhaps, higher than ever before known; between St. Johns and the Island of St. Therese, the water in the river stood on a level with the canal bank, making frequent breaches into the canal, and causing heavy and dangerous slides from the inside of the bank, which for some days endangered the navigation, and further damage was only prevented by the exertions of the superintendent and his men, who were kept constantly employed at this point. It was not until the middle of June that horses employed in towing could safely pass along the towing-path on that portion of the canal, but were crossed on a scow to the main shore at the head of the island. Slides have also occurred in other portions of the bank, which has been strengthened and protected with stone.

The removal of deposit from the bottom of the canal was also tedious and expensive, and could only be effected by forming coffer-dams at each end of the shoal, and pumping out the water; about four miles of the channel was cleared in this way before the navigation could be opened.

Two new pairs of lock-gates were built by the lock and bridge keepers last winter; one pair for Lock No. 8, and one pair for Lock No. 1, both of which were brought into use, and the lower gates of Lock No. 1 repaired.

Several towing-path and road bridges have been renewed, and others repaired.

The landing-pier at Chambly has been repaired and partially sheeted with plank to prevent its being raised by the ice. The storehouse and workshop have also been thoroughly repaired.

Two new pairs of gates should be built this winter, viz: the lower gates for Lock No. 2, and the upper gates for Lock No. 4; and the upper gates at Lock No. 5 should be repaired, which can principally be done by men on the permanent establishment.

The upper wing and recess walls at Locks Nos. 1 and 7 leak badly, and will soon have to be rebuilt; but with attention they may be made to stand a year or two. The sill of Lock No. 7, must be repaired next spring.

The abutments of Lapannes by-wash are built of timber and must be renewed; there are also a large number of towing-path and road bridges that can no longer be considered safe, which must be renewed. Swing-bridge No. 5 requires a new bottom, and No. 8 a new pivot-beam.

The trade became very active during the fall months, when all large vessels experienced difficulty by grounding at the foot of the slopes and on deposit from the ditches and creeks, all of which should be removed before opening the canal. This work is not only expensive but difficult to accomplish at that season of the year. A large portion of the banks still require strengthening with stone, to prevent further slides.

This canal was opened on the 6th day of May, and was maintained in navigable order until the 1st of November, when a breach occurred in the bank below Vickerman's by-wash, which interrupted navigation six days. It closed for the season on the fourth day of December; there was, however, much difficulty in passing vessels after the 16th day of November, on account of the ice. There has been \$69.70 collected for fines and damages during the season, and \$32.64 for dues on wood, &c., making a total of \$102.34, details of which, with the estimated expense of repairs for 1863, amounting to \$7440, will be forwarded herewith.

ST. OURS LOCK AND DAM.

These works sustained considerable damage by high water and ice on the 17th, 18th, and 19th days of April. For a time it was thought a main portion of the island would be inundated, and the piers at the lock swept away by the floating ice. Several of the coping-stones in the upper wing walls of the lock were moved and broken. The water flowed over that portion of the dam between the lock and road near the mill, and washed away some two or three feet of the top of the bank, but was checked by the exertions of the superintendent and his men.

The piers, having been well braced the fall previous, sustained but little damage. These damages have all been repaired, and 103 toise of stone used in protecting the dam; 15 toise were placed in holes that had formed above the dam, and about 10 toise for securing the anchor cribs. By examinations made after breaking the water on the apex of the dam, it is found that a large quantity of stone is still required for protecting the centre, which now appears to be the weakest point. The apron-cribs at this point were found nearly empty. Some 75 toise of stone were used in filling a portion of them and the space between the cribs and lower side of the dam. At least 200 toise should be furnished for that purpose next season, and a new scow built for examining the dam and breaking the water for repairs, and the large scows should be repaired.

The upper portion of the lock-gates should be pointed, and the piers kept in repair, all of which is estimated to cost \$2800. The protection-walls on the island and at each end of the dam sustained but little damage. The repairs for 1862 amounted to \$1081.53, which was the balance of appropriation remaining over from 1861.

The navigation opened on the 25th day of April, and with the exception of a few hours delay in adjusting the gates, &c., was successfully maintained until the 2nd day of December, when it was permanently closed by ice.

ST. ANNE'S LOCK AND DAM.

The spring freshet carried away about thirty feet of the upper guide-pier above the lock and broke and carried away about one hundred and fifty feet of the top of the long dam, near the ice breaker. The superstructure of the guide-cribs placed about a mile below the lock was also displaced. These cribs have been thoroughly repaired; the upper one from the water surface, two courses of new timber placed on the lower one, and both filled with stone. The wing-dam below the lock has been raised four feet, and an opening made to allow barges to pass behind the long pier to avoid the strong current during season of high water. This opening was made in 1861, and was of great service to the trade last spring, barges and small steamers being able to approach and leave the lower entrance of the lock without difficulty. Some three hundred feet of the upper end of the long pier above the dam has been repaired and covered with new three-inch plank, and 190 feet of the face sheeted with three-inch elm plank. The upper guide-pier above the lock was repaired, and the corners of the remaining five sheeted with four-inch elm plank, and such other repairs effected as were found necessary.

There is still 200 feet of the long pier above the lock which must be repaired next year. Some 200 feet of the face should also be sheeted with elm or tamarack plank. These and other necessary repairs are estimated to cost \$900.

The trade over this route is yearly increasing, as shown by the annexed comparative statement of the trade for 1861 and 1862. The navigation at this lock opened on the 29th day of April, and was uninterruptedly maintained until the 2nd day of December, when it was permanently closed by ice.

CARILLON & GRENVILLE CANALS.

The trade through these canals is steadily increasing, and must continue to increase from year to year, as the land drained by the Ottawa River and its branches is improved and settled; their maintenance is therefore a matter of great importance to that section of the Province.

Notwithstanding the unusually low water in the Ottawa during the past season, the full draft has been maintained in these canals, except for a few hours on the Carillon section, when the waste by lockage was greater than could be supplied by the North River feeder.

The repairs for the past year have been confined to such works as were absolutely required for the maintenance of navigation, and consisted principally in repairing lock and sluice gates, cleaning the bottom at the most difficult points, making a passing place above Lock No. 10, raising and improving the towing-path on the Grenville section which had become impassable, repairing fences, dredging the channel above the guard-lock at Grenville, and rebuilding the temporary dam across the North River for supplying the Carillon section with water. Raising this dam forms an annual expenditure of about \$200, the

largest portion of which might be avoided by sinking a line of cribs across the river, top of the cribs to be at line of low water, which would supply a much larger volume of water for navigation.

The superstructure of the pier at the upper entrance of the Grenville Canal is quite rotten; the repairs, therefore, cannot be dispensed with beyond the incoming season.

The construction of spare lock-gates, asked for in report for 1861, should be built during the winter and completed in time to be made available for opening the canal in May.

Special attention must be given to cleaning the bottom of the canal before letting the water next spring, and portions of the banks on the Grenville station raised. Together with the ordinary repairs for 1863, is estimated to cost \$4100, a detailed copy of which may be found herewith.

There has been \$107.06 collected at various points along the line, for dues on firewood piled on canal grounds.

These canals were opened to the trade on the 3rd day of May, and closed on the 31st day of November.

I am, sir,

Your obedient servant,

(Signed,)

JOHN G. SIPPPELL,

Superintendent Engineer

T. Trudeau, Esq.,

Secretary Public Works, Quebec.

BEAUHARNOIS CANAL.

STATEMENT in detail of the estimated cost of repairs for 1863.

Structures.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Dykes and Dams	Dyke through Hungry Bay ...lin. yds	3600	0 25	875 00	
	Dams.....say			300 00	
					1175 00
Pier at Head Canal	Pine timber .....lin. feet	3000	0 17	510 00	
					510 00
Banks, Slope Walls, &c.....	Gen. repairs before opening canal..say			1700 00	
	Raising banks, &c .....lin. yds	500	1 00	500 00	
	Stone for walls .....toise	50	6 00	300 00	
	Mooring posts.....	50	2 00	100 00	
					1900 00
Ditches	Cleaning ditches.....arpents	350	2 00		
					700 00
Locks	General repairs.....	9	50 00	450 00	
	Pointing walls.....say			200 00	
	Repairs to retaining walls.....cub yds	250	2 00	500 00	
	Oak timber for bumping posts do ft	150	1 00	150 00	
	do lock gates..... do	250	1 00	250 00	
					1550 00
Bridges	General repairs.....	8	75 00	600 00	
	Bridge at lock No. 14 .....say			250 00	
	Painting.....	9	75 00	675 00	
					1525 00
Lock Houses	General repairs.....	18	20 00	360 00	
					360 00
	Total estimated cost for repairs...				7720 00

BEAUHARNOIS CANAL.

STATEMENT of the amount of Fines and Damages collected by order of the Superintendent for the year 1862.

Date.	Name of Vessel.	Owners.	Amount.	Remarks.
			\$ cts.	
May 9.....	Propeller Whitby	Black & Co.....	5 00	Injury to bumping post.
" 9.....	" West	Cowan & Co.	9 00	" lower gates, Lock 14
" 21.....	Steamer St. Lawrence	Smith	10 00	Violation of canal regulations.
June 2.....	Propeller Protection.....	"	40 00	do do do
" 7.....	Barge Juno.....	Glassford ..	1 25	Injury to upper gates, Lock 9.
" 9.....	" Williamstown.....	Brown.....	2 75	" lower gates, Lock 10.
" 11.....	" Neptune	Baker	4 00	Violation of canal regulations.
" 17.....	" Jet	Cowan & Co.....	0 60	Injury to crab handle.
July 8.....	Steamer St. Helen.....	Smith	1 00	" ferry scow No. 2.
" 8.....	" Hope.....	Glassford	10 00	Entering Lock 11 at full speed.
" 22.....	" Ottawa.....	Jacques & Co.....	20 00	Injury to a scow and fine.
Aug. 12.....	Barge Portland	Chaffey	4 00	" upper gates, Lock 8.
" 22.....	" Jean Baptiste.....	Benoit.....	2 15	" " Lock 12.
" 25.....	Steamer Ranger	Black & Co	4 50	" " "
Sept. 3.....	" Boston	Chaffey	1 00	" lower gates, Lock 9.
" 11.....	" Clyde	Cowan & Co.....	8 00	" upper gates, Lock 10 & 11
" 24.....	" Clyde	"	18 85	" lower gates, Lock 8 & 11
Oct. 16.....	Barge Lyre.....	Glassford	15 00	" bumping post, lock 10.
" 17.....	" Neptune	Baker	5 00	" upper gates, lock 10.
" 23.....	Schooner Admiral.....	Wilson	61 62	" lower gates, Lock 9 and 1
" 24.....	Barge Quebec.....	Laporte.....	0 70	" crab handle.
Nov. 7.....	Elevator Samson.....	Cowan & Co.....	10 00	" upper gates, Lock 8.
" 13.....	Schooner Mary Grover.....	Russell	20 00	" bridge over Lock 14.
			\$254 42	

(Signed,) **PIERRE LAURENCEL,**
Superintendent.

LACHINE CANAL.

STATEMENT in detail of the estimated cost of repairs for 1863.

Structures.	I T E M S .	Quantities.	Prices.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Banks and Slope Walls.....	General repairs... ..			2600 00	
	Mooring posts.....	50	2 50	125 00	2725 00
Locks	General repairs to walls				
	Mitre sills and gates.....	5	150 00	750 00	
	Gates to old lock.....	2	300 00	600 00	1350 00
Bridges	Pine timber.....lineal feet	1500	0 25	375 00	
	do plank.....F B M	40000	30 00	1200 00	
	Spikes	1000	0 10	100 00	
	Overhauling Montreal bridge.....say			500 00	
	General repairs.....	4	50 00	200 00	2375 00
Regulating Weirs.....	Pine plank.....	10000	20 00	200 00	
	Pine timber..... lineal feet	500	0 20	100 00	
	Spikes, &c.....lbs	400	0 10	40 00	340 00
Pier at Lachine.....	Repairs to walls			275 00	275 00
Four Sheds and Wharves..	Pine plank.....F B M	85000	20 00	1700 00	
	Spikes	2500	0 10	250 00	
	Water conductors.....say			75 00	
	Walls, south side of basin No. 2...say			400 00	
	Banks at wood and lumber basin...say			650 00	3075 00
Buildings	General repairs.....	8	50 00	400 00	400 00
	Total estimated cost.....				10,540 00

STEAM DREDGE.

STATEMENT in detail of the repairs and working expenses for 1863.

	I T E M S .	Amounts.	Totals.
		\$ cts.	\$ cts.
Repairs	Deck and hull of dredge.....say	150 00	
	do scows.....say	250 00	400 00
Engine	Blacksmith work.....say	75 00	
	Engineer and assistant, fitting up in spring.....say	75 00	150 00
Working Dredge.....	Six months working expenses at \$600.....		3600 00
	Total estimated cost		4150 00

LACHINE CANAL.

STATEMENT of the amount of Fines and Damages collected by order of the Superintendent for the year 1862.

Date.	Name of Vessel.	Owners.	Amount.	REMARKS.
			\$ cts.	
May 12...	Steamer Salaberry	Renaud.....	10 00	Damage to Lower Gates, Lock No. 1
do 24...	Barge Mohawk	Laplante.....	5 00	Fined for infringing Canal regulations
do 24...	do Glassmaker.....	Fortin ..	5 00	do do do
do 24...	Scow John Bull.....	do	5 00	do do do
June 2...	Steamer Avon	Jacques & Co.....	12 00	Damage to Lock No. 4.
do 3...	do Protection.....	Farrell	40 00	Fined for obstructing navigation.
do 12...	Barge Hermine .....	.....	10 00	do do do
do 20...	do Eos	Smith	20 00	Damage to Bridge at Lock No. 5.
July 17...	do Newboro'	J. H. McLennan..	50 00	Damage to Guide, pier No. 7.
August 6...	do Emu	Elevator Co.....	5 00	Taking forcible possession of Lock 5
do 8...	do Oak	Chaffey & Co.....	2 50	Fined for obstructing navigation.
do 11...	Schooner Black Hawk.....	.....	6 00	Damage to culvert.
do 13...	Barge Flora.....	Arcand	10 00	do Wellington Bridge.
do 18...	do Almina	Portetance	12 00	do Lock No. 3.
do 18...	Steamer Ottawa.....	Jacques & Co.....	50 00	do Wellington Bridge.
do 18...	Crib of flat Tamarac	Auger	5 00	Fined for obstructing navigation.
do 25...	Crib of flat Timber	Lapointe.....	5 00	do do do
do 28...	Schooner Maria.....	Belanger.....	10 00	Damage to Cote St. Paul Bridge.
do 30...	Raft square Timber.....	Lapointe.....	5 00	Abandoned and obstructing navigation
do 30...	Crib flat do	Cusson	4 00	Adrift in channel.
do 30...	do do	Normand	4 00	do do
do 30...	do round do	Dickson	4 00	do do
do 30...	4 cribs Cedar.....	Helmer	16 00	do do
Sept., 6...	2 do	Carden	8 00	do do
do 15...	Schooner Niagara.....	Muir & Co	8 00	Damage to Wellington Bridge.
do 15...	Crib flat Timber	Cusson	4 00	Adrift in channel.
do 20...	do do	McGaurran	4 00	do do
Oct., 9...	Barge Henrietta Reeve	Johnson	12 00	Damage to sluice gate racks.
do 13...	do Azilda	Crowley	8 00	do Lock No. 2.
do 15...	do Union	Larmon.....	5 00	do Lock No. 3.
do 15...	Scow John Bull.....	Fortin	5 00	Obstructing navigation.
do 15...	do Ottawa	Legala	5 00	do do
do 15...	Barge Lady	Sabourin.....	10 00	do do
November ..	Schooner Paragon	Kemp	10 00	do do
do ..	Scow Crosby	Chaffey	5 00	do do
do ..	Steamer Amity	Colvert	8 00	
do ..	Steam Elevator.....	Oir & Co.....		
October 15...	Proceeds of sale of Barge Baronne		18 50	
		Total	\$411 00	

(Signed,)

ALEXANDER BISSETT,
Superintendent.

CHAMBLY CANAL.

STATEMENT in detail of the estimated cost of repairs for 1863.

Structure.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Piers of Canal and Banks	Cleaning canal bottom.....say			1500 00	
	Stone for protecting banks .....toise	150	6 00	900 00	
	Scowing stone and protect.ng banks lineal yards.....	5000	0 25	1250 00	
					3650 00
Locks	General repairs.....	9	75 00	675 00	
	Timber for repairs to gates, and for new gates.. .....cub. feet	1000	1 00	1000 00	
	Pine timber..... do	500	0 20	100 00	
	Blacksmith work.....say			150 00	
					1925 00
Bridges.....	General repairs... ..	9	50 00	450 00	
	Repairs to abutments.....	3	30 00	90 00	
	Timber for repairs lin. feet	1000	0 20	200 00	
	Plank: for do	10000	20 00	200 00	
	Blacksmith work.....			75 00	
					1015 00
Wharves, &c	Pine timber.....cub. ft	3000	0 20	600 00	
	Mooring posts.....	25	2 00	50 00	
	Stone filling.....toise	25	8 00	200 00	
					850 00
	Total estimated cost.....	.....	.....	.....	7410 00

CHAMBLY CANAL.

STATEMENT of the amount of Fines and Damages collected by order of the Superintendent for the year 1862.

Date.		Name of Vessel.	Master or Owner.	Amount.	REMARKS.
				\$ cts.	
June	6...	Raft, square timber.....	Tucker, Captain	5 00	Damage to bridge No. 1.
July	9...	Barge of steamer 'Erie'.....	Halero do	2 50	do lock No. 4.
do	10...	Steamer 'Rose'.....	McNaughton do	2 00	do lock " 7.
August	4...	Steamer 'Rose'.....	do do	2 00	do canal scow
do	7...	Two horses belonging to.....	Boivin.....	0 50	do canal bank.
do	7...	Barge 'Experiment'	Martin, Captain.....	1 00	do bridge No. 5.
Sept.	3...	Barge 'Castor'	Laféche do	1 00	do lock " 2.
October	8...	Barge 'Safety Fund'.....	Birt do	2 50	Fined for abusing lock tend
do	8...	Steamer 'Erie'.....	Parker do	6 00	Damage to bridge No. 5.
do	20...	Barge 'George'.....	Vinet do	1 50	do do " 8.
do	23...	Steamer 'Erie'	Mallet do	1 00	do lock " 8.
Nov.	17...	Barge 'Major'.....	Champagne do	1 50	do do " 9.
do	22...	Boat 'Security'.....	Woodruff do	4 00	do do " 4.
do	24...	Amount paid by	G. Copeland.....	15 20	For plank and spikes.
do	29...	Barge 'Canada'	Guay, Captain.....	24 00	Damage to lock No. 5.
		Amount collected for wharf	age, &c	69 70	
				32 64	
				102 34	

(Signed),

P. T. CHARTIER,

Superintendent

ST. OURS LOCK AND DAM.

STATEMENT in detail of the estimated cost of Repairs, for 1863.

Structures.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Piers and Lock	Painting and repairing gates .....say			150 00	
	Strengthening and repairing piers			300 00	
					450 00
Dam and protection walls.	Stone ballast for protecting dam...twelve	200	10 00	2,000 00	
	New small scow, and repairs to large one			350 00	
					2,350 00
	Total estimated cost.....				\$2,800 00

ST. ANNES LOCK AND DAM.

STATEMENT in detail of the estimated cost of Repairs, for 1863.

Structures.	ITEMS.	Quantities.	Price.	Amount.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Dam above Lock.....	Pine timber.....lineal feet	2,000	0 20	400 00	
	Pine planks.....F. B. M.	12,000	20 00	240 00	
	Elm or tamarac plank do	4,000	30 00	120 00	
	Spikes .....lbs.	250	0 10	25 00	
					785 00
Lock	General repairs .....say				115 00
	Total estimated cost.....				\$900 00

ST. ANNES LOCK.

COMPARATIVE Statement of the number of Steamers and other Craft that passed through the St. Annes Lock during the season of 1861 and 1862, and the amount of Tonnage and Tolls.

VESSELS.	1861.			1862.		
	Number.	Tons.	Amount of Tolls.	Number.	Tons.	Amount of Tolls.
			\$ cts.			\$ cts.
British Steamers.....	931	47,274	.....	923	49,906	.....
Sailing and other Craft.....	2,665	168,915	6,316 03	2,991	186,437	6,944 68
American Vessels.....	54	3,486	.....	86	5,386	.....
Total.....	3,650	219,675	6,316 03	4,000	241,729	6,944 68
				3,650	219,675	6,316 03
Increase for 1862 .....	.....	.....	.....	350	22,054	\$628 65

(Signed,)

JOHN BARRETT,
Collector.

CARILLON AND RENVILLE CANALS.

STATEMENT in detail of the estimated cost of repairs for 1863.

Structures.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Wharf at Grenville.....	Pine timber.....lin. feet	2500	0 17	425 00	
	do plank.....F B M	6000	20 00	120 00	
	Spikes, &c.....lbs	300	0 10	30 00	575 00
Prism and Banks	Cleaning canal bottom.....say	.....	.....	900 00	
	Raising and repairing banks.....	.....	.....	850 00	1750 00
Locks and Bridges.....	General repairs.....	13	50 00	650 00	
	Tamarac knees.....	10	25 00	250 00	
	Timber for repairs.....cub. feet	750	0 30	225 00	
	Carpenters' and blacksmiths' work..say	.....	.....	450 00	1575 00
Dams.	Raising and maintaining temporary dam on North River .....say	.....	.....	.....	200 00
	Total estimated cost.....	.....	.....	.....	4100 00

APPENDIX D.

RIDEAU CANAL.—ANNUAL REPORT.

OTTAWA, Dec. 31, 1862.

SIR,—This Canal was opened for navigation at the Kingston end on the 1st of May, and throughout on the 1st September, and continued open until the 26th November, when it was closed by the frost. On the 19th of April, this part of the country was visited by a flood which injured our canal materially, and caused other serious damage in the neighbourhood; on many of the tributaries of the Rideau River, mills have been erected and dams to retain the water; most of these dams gave way, thus adding to the flood, which destroyed many bridges and other property in its progress.

The most serious damage this canal sustained was the breach in the dam at Hogsback. This dam is fifty feet high, the surplus water flowed through a rocky channel on the westerly side and over a wooden dam eighty feet wide, which previous to 1841 was composed of posts and stop logs, but which was damaged by a flood at that time, and was then made up solid, by putting gravel about it and sheeting below; so that there were no means of drawing down the water in the reach above. During the flood, there was a sectional area of 1744 feet of water passing over Black Rapids Dam, the station above Hogsback; now an area of 1080 feet would raise the water up to the level of the great earth dam at Hogsback, so that a break was inevitable, and the dam was cut down to the regular bed of the river.

At Black Rapids, the stone dam was considerably out of repair, and was further injured by the flood, so that it was considered advisable to construct a new one. At Long Island, a breach was threatened at the point of the Island; the water was running over to the depth of four feet, but, by timely exertion, further damage was fortunately prevented.

The dams at the following stations were injured, viz: Burritt's Rapids, Merrickville, Old Slys, Smith's Falls detached Locks, and Poonamalie. Some of these were much decayed, and required extensive repairs under any circumstances. The Rideau Lake was fortunately drawn down lower than usual this season; the logs were only put in on the 15th of April, the day before the flood commenced. The Lake was thus able to retain most of the waters of the River Tay, and several smaller streams for a while. In one week the water in the lake rose three feet, thus keeping back a quantity of water equal to about 60 square miles area, by three feet deep; if this water had been added to the flood, the damages would have been greater.

The Hogsback dam was repaired at a cost of \$29,343, including a suitable provision made to pass any future flood. The canal now is in a much better state of repair than it has been for some time. During the past four years, the following works have been renewed or thoroughly repaired, which were previously in a state of dilapidation and liable at any time to fail:—Hogsback Dam, repaired thoroughly; Black Rapids Dam and one sill renewed; Long Island Dam renewed; Burritt's Rapids Dam repaired thoroughly; Mantland's Dam renewed; Smith's Falls Dam renewed; Beaver's Lower Mill, the side of lock rebuilt, new floor, and foundations.

These are all durable and permanent works. During the past year three pairs of lock gates also have been renewed, viz: at Hartwell's, Hogsback, and Elthron's Stations. The principal repairs that will be required this season are as follows: Kingston Mills, one pair lock gates to be renewed. The stone retaining dam which was built on the bed of the old creek is bulged outwards and must be supported. It is proposed to dump about 500 yards of coarse gravel in front of it, as there is not a good foundation to build any structures upon. Brewer's upper Mills, one pair of gates to be renewed, there is a great leak under the lower sill; attempts have been made to stop this leak, but have had no partial failures; the foundation is partly rock and partly earth, and is difficult to manage. After the lock is laid dry, what repairs are necessary can be better ascertained.

Several of the bulkheads at the end of the canal have been in existence since the canal was built. They are now decayed, and will have to be renewed. It is proposed this year to renew Davis's, Poonamalie, and Old Slys ; these are not large and will not be very costly. Merrickville Dam will require thorough repairs. It was badly shaken during the flood last spring, and was patched up to do duty during the past season. A dry dock is much needed at Ottawa ; the locks have to be used to repair vessels when an accident occurs. There was formerly a wooden lock at the Bywash, at the Canal Basin ; the lower gates are gone, but the upper gates have been renewed ; still, the crib work to which these gates are hung is old and delapidated ; it might last for many years, but might go away suddenly, in which case a great part of Lower Town would be flooded, and considerable damage done. I have proposed, instead of disturbing the upper gates, to build a dam with a small opening or sluice in it, where the lower gates formerly were, so as to be a safeguard in case the upper gates should fail. I believe this to be a necessary precaution, and it will be something towards a dry dock, in case one should be made here. With further reference to this by wash, which runs into the Rideau River, after traversing a considerable portion of Lower Town, the Municipality some time ago was desirous of having it covered over, and sent in a memorial, but this memorial did not express very clearly what was required. I put myself in communication with the authorities to find out what they did want, but there has been no action taken in the matter since. It would be desirable to have it covered over in the thickly settled parts of the city, as it is both unsightly and a depository for rubbish, &c This will cost about three dollars per lineal foot or upwards, according to the character of the works.

With reference to the traffic on this canal, the returns are now made direct from the Lockmasters to J. S. McCuaig, Esq., Inspector of Canals, Kingston, instead of to this office, as formerly. The cost of the several works, mentioned before, to be done this season, together with other minor repairs, will be found stated in detail in the schedule annexed.

I have the honor to be, Sir,
Your obedient servant,
(Signed) JAMES D. SLATER,
Superintendent Rideau Canal.

RIDEAU CANAL.
STATEMENT of the Expenditure for the Repairs and Management, &c., during the year 1862

YEARS.	Repairs,	Lock Master and Lock Laborers.	Office Establishment.
	\$ cts.	\$ cts.	\$ cts.
1852.			
January.....	18 30	589 00	353 99
February	109 16	532 00	346 97
March	1408 50	589 00	370 13
April	302 39	909 10	411 16
May	478 17	1271 00	364 51
June.....	1108 39	1230 00	380 39
July	482 37	1280 00	382 37
August.....	122 46	1289 60	356 96
September	335 64	1248 00	750 31
October	309 52	1289 60	374 96
November	223 52	1241 40	352 16
December	162 45	589 00	338 16
Total	\$5,060 87	\$12,057 70	\$4,382 06

RIDEAU CANAL.

STATEMENT of the Expenditure for special and permanent Works, during the year 1862

	\$	cts.
Nelson, Contractor—Three pairs Lock Gates ; 1 at Hartwells ; 1 at Hogsback ; and 1 pair at Edmond's Stations.	1886	02
April—Protecting the Works from damage by flood, at Hogsback.....	389	64
do — do do do Long Island	276	38
do —Hogsback Dam	29342	91
do —Black Rapids Dam	5143	27
Total	337,038	22

RECAPITULATION OF COST.

	\$	cts.
Special and permanent works—brought down	37038	32
Sundry repairs and incidental— do	5060	87
Lock Masters and Lock Laborers— do	12057	70
Office Establishment and Management— do	4332	06
Total.....	58,538	86

RIDEAU CANALS.—REPAIRS FOR 1863.

STATIONS.	Amount.	REMARKS.
	\$	cts.
Kingston Mills	440	26
do	200	00
Brewers Upper Mills	378	09
do Lower do	84	56
Jones' Falls.....	152	98
Davis'	220	53
Chaffers.....	33	80
Newboro'	339	78
Narrows	388	50
Poonamalie	658	10
Smiths' Falls, detached.....	93	90
do combined	40	44
Old Stys'.....	493	05
Edmonds	22	56
Maitlands	62	00
Merrickville	461	32
Clowes Quarry	239	00
Nicholson's Rapids.....	396	80
Burnitt's Rapids	26	90
Long Island.....	38	22
Black Rapids	41	40
Hogsback	47	60
Hartwells	37	40
Ottawa	248	60
Dam at By-wash, do	400	00
Total	5,540	73

(Signed,)

JAMES D. SLATER,
Superintendent Rideau Canal.

APPENDIX E.

ANNUAL REPORT OF THE SUPERINTENDENT OF OTTAWA WORKS.

OTTAWA WORKS, SUPERINTENDENTS OFFICE,
Ottawa, 17th Dec'r, 1862.

SIR,—I have the honor to acknowledge the receipt of your communication of the 11th inst., requesting me to send to the Department as early as possible my annual report on the works under my charge.

For the information of the Honorable the Commissioner, I would state that the works on the Ottawa River and its tributaries are in comparatively good order, so that the outlay required to make them available for the business of the coming spring will be very moderate.

JOACHIM STATION.

The works there were well overhauled last winter. A new bulkhead will be required, the cost of which and of raising one of the support piers will be about.....\$300 00

CALUMET STATION.

The slides and other improvements there were thoroughly repaired last winter. About 5000 feet B. M. of plank will have to be provided, at a cost of \$15 per M.....\$75 00

MOUNTAIN STATION.

To repair the side piers of the long slide there will be required 2000 cubic feet of white pine timber @ 12c.....	\$240 00
Iron spikes, 500 lbs. @ 8c.....	40 00
Stone filling, 75 cubic yards @ 90c.....	45 00
Total.....	\$325 00

PORTAGE-DU-FORT STATION.

The slide there is in good repair, but the guide-boom, 887 feet long, will have to be renewed; the quantity of timber required for this purpose and for 5 new stop logs will be 2757 cubic feet @ 15c.....	\$413 55
Screw-bolts for boom, 457 lbs. @ 10c.....	45 70
Total.....	\$459 25

THE CHENAUX BOOMS

Are in good order and require no repairs.

CHATS STATION.

The slide is in a good state of repair. A new apron will have to be substituted for the old one; this has to be done annually, on account of the great tear and wear caused by the steepness of the slide. The cost of a new apron will be.....\$200.

THE REMONS BOOM

And piers require no repairs.

LITTLE CHAUDIERE STATION.

No outlay required on the slide and piers, but the excavated channel leading to the head of the slide is too shallow during the low water season. Many of the lumber merchants are anxious to pass their timber on the north side of the Chaudiere falls, as there is an extensive harbor a short distance below the outlet of the Hull slide, which is very convenient for "banding up" their "cribs." Rafts moored on the north side of the river are seldom disturbed by steamboats, and the distance to be walked by the men in returning to the head of the rapids is much shorter on this side than on the other. It is very desirable that the great body of timber which annually arrives at this city should be divided and

taken in about equal quantities through the Ottawa and Hull slides, so that the rafts may be delayed as short a time as possible. With the view of making this arrangement practicable at low water, I would strongly recommend that 900 cubic yards of rock be removed from the channel referred to, and that the work be done in the month of August next. The cost of blasting 900 cubic yards of rock in such a situation @ \$1.50 per yard will be.....\$1,350 00

Expense of constructing coffer-dam..... 200 00

\$1,550 00

I know of no improvement on the main river that would be more acceptable to the Ottawa Lumber Trade than the one just described.

NORTH CHAUDIERE OR HULL STATION.

The slide was reconstructed last winter and needs no repairs.

SOUTH CHAUDIERE OR OTTAWA STATION.

The slides require no repairs. Two new aprons should be provided, however, at a cost of \$200 each.....\$400 00

The booms and piers immediately above the Chaudiere falls, on both sides of the river, are in good working order.

THE UNION SUSPENSION BRIDGE

Was thoroughly overhauled and repaired two years ago, and is now in good order.

THE LINE OF WOODEN BRIDGES

Forming the southern approach to the Union Bridge is now nearly worn out. The roadway planking was renewed last spring, and, at the same time, supports were placed between some of the piers. Although the traffic on these bridges is very great, they can, with some patching, be used another year.

THE WOODEN BRIDGE OVER THE HULL SLIDE

On the northern approach to the Union bridge is new and in good order.

POOLEY'S BRIDGE,

A wooden structure over the ravine at the end of Queen Street in the City of Ottawa, was built by the Government when the Suspension Bridge was constructed, and has been maintained at the public expense ever since. As the bridge is not in a line with the street just named, it should, in my opinion, be handed over to the Corporation, so that, in improving the streets, they may change the position of the bridge to suit the convenience of the public. I recommended this step in a former report, being of opinion that Pooley's bridge should become the property of the municipality and be kept up at the expense of the city. In the event of its being kept in repair by the Government, as heretofore, the roadway of the bridge will have to be renewed next spring at a cost of.....\$150 00

CARILLON STATION.

The long dams there are in a good state of repair.

TRIBUTARIES OF THE OTTAWA.

I. PETEWAWA RIVER.

On the north branch of this stream, the dam and slide at Crooked Chute require no repairs.

At Half-Mile Rapid there is a large deposit of gravel and boulders, where the dam connects with the westerly shore, under which the water found its way last spring. This passage will have to be stopped at an expense of about.....\$50 00

The large retaining-boom, support-piers, dam, and slide at the Bois d'ur Station are in good working order and require no repairs. The same remarks are applicable to the long slide, dam, and boom at the Third Chute; the long dam, slide, boom, and support-piers at the Second Chute; the dam, slide, boom, and support piers at the First Chute; the long retaining-boom and support-piers at the mouth of the river; and also to the improvements on the South Branch of the Petewawa, consisting of six slides.

II. MADAWASKA RIVER.

The following improvements require no repairs this winter, viz:—The slide, retaining-booms, and piers at Chain Rapids, dams at Bailey's, Duck's and Boniface Rapids, dams and piers at Ragged Chute, main dam, guide-boom, and support-piers at High Falls, the three dams between High Falls and Calabogie Lake, the main retaining boom and support-piers in Calabogie Lake, the guide-boom and piers at Burnstown bridge, the two long dams at Long and Flat rapids, the Crib slide at Arnprior, the main retaining-boom and support-piers at the mouth of the river, and the four mooring-piers at the head of Chats rapids.

At High Falls, some planking will have to be done to the slide at a cost of say \$100 00
The guide-pier, 100 feet long, 10 feet wide, and 8 feet high, at Balmer's Island will have to be rebuilt. The materials required will be 1500 cubic feet of white pine @ 12c.....\$180 00
237 cubic yards stone filling @ 50c..... 118 50
600 lbs. iron spikes @ 8c..... 48 00
A new apron will have to be furnished for the Arnprior station at an expense of..... 200 00

Cost of Madawaska repairs.....\$646 50

III. GATINEAU RIVER

The boom in the Lake, near the mouth of the river, requires 94 oak pickets turned from scantling six inches square and 3 feet long, the expense of which at 50c each will be..... \$47 00
40 new fine caps, 14 in. wide, 6 in. thick, and 12 feet long, at 80c..... 32 00

Cost of Gatineau repairs..... \$79 00

The other improvements on the river require no repairs; the bridge over the canal is in good condition, having been built last winter.

As a general rule, I cause the small repairs at the several stations to be executed by the resident deputy slidemasters, as they are under pay throughout the year; under this system they have shewn their efficiency, and in many cases have proved themselves good mechanics.

It affords me much pleasure to report to the Honorable the Commissioner that so small an amount as that appearing in the annexed recapitulation will suffice for preparing the works under my charge for the business of another season.

NEW WORKS COMPLETED IN 1862.

The new works on the Ottawa river consist of two large piers in the Chats Lake, at the head of the rapids. These piers are used by the raftsmen for mooring purposes, preparatory to running their timber through the rapids. At the Little Chaudiere Station, a long guard-pier was built, with the view of leading the cribs into the slide.

That portion of the west branch of the Petewawa River, for a distance of six miles above Lake Traverse, was improved. The works consisted of a dam, long slide, guide-boom, and support pier at the Cascade or High Falls. The works at the lower stations consisted of side dams and glance-piers, together with a retaining-boom at the upper end of Lake Traverse.

On the Madawaska River, at Chain Rapids Station, two new support-piers for the retaining-boom were built. At the foot of the long slide at the High Falls Station, a support-pier and glance-boom were constructed.

The works connected with maintenance or repairs of the slides, &c., under my charge may be described as follows, viz :

Reconstruction of dam at the first chute of the Petewawa River.

Reconstruction of lower slide at Calumet Station.

Repairing of upper " " "

Lengthening slide at Mountain Station.

Reconstruction of slide at Hull Station.

Strengthening the works at Joachim Station.

Repairing long slide at High Falls Station (Madawaska River), and strengthening boom at the head of the same.

Reconstruction of bridge over Hull slide channel.

Reconstruction of bridge over Gatineau Canal.

Renewing portions of side piers of South Chaudiere or Ottawa slide.

The following statistics shew the importance of the Upper Ottawa Lumber Trade :

Square timber passed through Chaudiere slides, 1862, 15,561 cribs—

equal to.....	326,781 pieces.
Sawlogs from the Upper Ottawa arrived at Chaudiere, about.....	90,000 "
Square timber from Gatineau River, 1862.....	9,251 "
Saw logs	154,918 "

The tolls on the above timber payable to the Government amounted to about \$49,000.00.

In respectfully submitting the above,

I have the honor to be, sir,

Your most obedient servant,

(Signed) HORACE MERRILL,

Supt. of Ottawa Works.

T. TRUDEAU, Esq.,

Sec. of Public works.

RECAPITULATION.

Estimated cost of repairs at Joachim Station.....	\$ 300 00
" " " Calumet.....	75 00
" " " Mountain.....	325 00
" " " Portage du Fort.....	459 25
" " " Chats Station.....	200 00
" " " Little Chaudiere.....	1550 00
" " " South Chaudiere (aprons).....	400 00
" " " " " (Pooley's bridge).....	150 00
" " " Petewawa River.....	50 00
" " " Madawaska River.....	646 50
" " " Gatineau River.....	79 00

Estimated cost of all the repairs.....\$4234 75

APPENDIX F.

ANNUAL REPORT OF THE SUPERINTENDENT OF THE SAINT MAURICE WORKS.

SUPERINTENDENT'S OFFICE, ST. MAURICE WORKS,
Three Rivers, Dec. 15th, 1862

SIR,—In compliance with the instructions of the Honorable the Commissioner of Public Works, bearing date the 11th instant, I have the honor to enclose my annual report for 1862.

REPAIRS.

Having, on the 20th August last, submitted to the Department a report containing an approximate estimate of the repairs required before the opening of the river next season, there are but few points which I consider to be necessary to be brought under the notice of the Honorable the Commissioner in this report.

The repairs, referred to in the foregoing paragraph, having received the sanction of the Government were immediately commenced, and are now nearly all completed. Inasmuch as the sum appropriated for repairs, viz, \$1541, is greater than the average amount thus expended in former years, it may be necessary to explain that this excess is caused entirely by the fact that the works are getting old and are decaying. Signs of decay must naturally be expected to exhibit themselves in increased numbers and magnitude from year to year. Booms are a description of work not only very liable to accident but exceedingly expensive both to keep in order and to operate, and should be dispensed with when possible.

The extent of booms, dams, slides, piers, &c. belonging to the St. Maurice works may be seen by the annexed appendix.

There is little worthy of notice in the operations of the past season. The booms, since they were extended in the spring, have all worked remarkably well. Some difficulty was experienced in putting out the boom at Shawinigan in consequence of a change in the current, but was effectually overcome without serious delay.

A few pieces of boom were broken last spring while in their winter quarters, by the departure of the ice. None were, however, lost, but were repaired by the permanent hands at the slide, without any additional expense.

MAINTENANCE.

The cost of maintenance the past year was \$7328.56c. This amount, although a little more than last year, is \$717 less than the average cost of the five preceding years. The continued low water during the summer prevented several parties from completing their drives until late in the fall, thereby obliging me to keep the booms in full operation throughout the season, and consequently causing additional expense in maintenance.

LANDS REQUIRED.

It is a matter of very great importance that sufficient land should be acquired at the mouth of the river to operate the booms without trespassing upon private property. I would therefore respectfully urge that the necessary land be purchased in accordance with my special report upon the subject with as little delay as possible.

I have the honor to be, sir,

Your obedient servant,

(Signed) HENRY R. SYMMES, Supt.

EXTENT OF PUBLIC WORKS ON THE RIVER ST. MAURICE.

STATION 1.—MOUTH OF RIVER.

Booms, feet in length.....	12,181
Mooring-piers, number of.....	46
Anchor-piers, ".....	4

STATION 2.—GRÈS FALLS.

Booms, feet in length.....	6,000
Anchor-piers, number of.....	6
Mooring-piers, ".....	1
Side-pier, feet in length.....	200
Unfinished slide, piers, &c	

STATION 3.—SHAWINEGAN FALLS.

Slide, feet in length.....	600
Mooring-piers, number of.....	18
Side-piers and dams, feet in length.....	600
Anchor-piers, number of.....	33
Booms, feet in length.....	18,000

STATION 4.—GRANDE MÈRE.

Slide, feet in length.....	400
Booms, " ".....	3500
4 side-piers ".....	500
Anchor-piers, number of.....	10

STATION 5.—LITTLE PILES.

Side-pier dam, length of.....	250
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STATION 6.—LA TUQUE.

Mooring-piers, number of.....	2
Anchor-piers, ".....	11
Side-dams and piers, feet in length.....	1291
Booms, " ".....	3500

RECAPITULATION.

Description of Works.	Number of	Feet in length.
Booms.....		43,181
Mooring-piers.....	67	
Anchor-piers.....	64	
Side-piers and dams.....	19	2,841
Slides.....	2	1,000

(Signed) HENRY R. SYMMES, Supt.

T. TRUDEAU, Esq.,
Secretary, Dep't of Public Works, Quebec.

APPENDIX G.

REPORT OF MR. G. F. BAILLAIRGÉ ON THE GASPÉ AND SAINT LAWRENCE ROAD.

CEDARS, 20th March, 1862.

T. TRUDEAU, Esq.,

Secretary of Public Works, Quebec.

SIR,—I beg to transmit you herewith my report describing the location of the proposed Coast Road from Cap de Chatte to Great Fox River, with its branch to Gaspé Basin and the climate, population, resources, and general features of the country along the same for a distance of 181 miles, 41½ of which are across seigniorial lands, 65½ across townships, and 73½ on the unsurveyed Crown lands of the Gaspé Peninsula.

The detailed estimate for each mile of the entire distance is enclosed with the above. The maps of the district explored will be completed in a fortnight at earliest, and will be forwarded together with other documents connected with the survey.

The profiles and specification of the work will be sent as soon as it is possible to complete them.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed,)

G. F. BAILLAIRGÉ

(Copy of No. 57917.)

CEDARS, 15th March, 1862.

T. TRUDEAU, Esq.,

Secretary, Department of Public Works, Quebec.

SIR,—In my report for 1860, concerning various roads in progress of construction below Quebec, I recommended that the country should be explored, between Ste. Anne des Monts and Great Fox River, for the purpose of locating the last link of roadway still wanting on the South Shore of the St. Lawrence, in the main highway between Quebec and Gaspé Basin.

MAIN LINE OR COAST ROAD.

In January, 1861, I received instructions from the Crown Lands and Public Works Departments, to proceed with the proposed exploration and road location, and to form two surveying parties, with the view of completing the field-work during the same winter.

The necessary outfit having been provided, I reached Ste. Anne des Monts on the 26th of the same month. Here I organized the two parties, one of which I placed under the charge of my assistant, Mr. A. J. Scott, on the Eastern division of the proposed route, between Great Fox and the Great Magdalen Rivers, and the other under my own management, upon the Western division, between the lower end of the Matane and Cap de Chatte Road, and the last named river. The field operations upon the former were begun on the 15th, and on the latter on the 1st of February; they were completed in May, together with my inspection of Mr. Scott's portion of the line.

LENGTH OF MAIN ROAD.

During the above period, the length of road line located, opened, blazed, levelled, and chained, was as follows:

From Matane and Cap de Chatte Road to lower end of Ste. Anne des Monts or to Township Tourelle, along present road through settlements.....	13.20 miles
From Ste. Anne des Monts to Great Magdalen River, opened through forest.....	64.22 "
Total on the Western division.....	77.42

From Great Magdalen River to Great Fox River, opened through forest		
Total on the Eastern division.....	50.78	"
Total length of Main Road.....	128.20	

LENGTH OF SIDE ROADS.

Side roads along the River Cap de Chatte to Upper Bridge site, on land partly cleared.....	2.24	"
Total number of miles located, &c.....	130.44	

of which 33½ miles pass across five seigniories.

EXTENT OF COUNTRY EXPLORED ALONG MAIN LINE.

During the same period the Western division was explored from the Coast to the valley of the Magdalen River, and to the range of the Notre Dame on the Shick-shock mountains; the Eastern division was also explored, from the coast to the Southward, for a distance of 4 miles or more.

NEW TOWNSHIPS AND BRANCH ROAD TO GASPÉ BASIN, PROPOSED IN FORMER REPORT.

While the work was in progress, I furnished a report on the 23d of March, respecting the general character of the line chosen; and, suggested, amongst other things, the expediency of laying out the front ranges of two new townships, between Tourelle and the Seignior of Mont Louis, and of tracing a branch road from the neighborhood of the Magdalen to the north side of Gaspé Basin. This would promote colonization across the interior, and give uninterrupted access to that important port, by avoiding the long and dangerous ferryage of 3 miles or more from the basin across the Bay of Gaspé to the peninsula, which is the terminus of the road now completed to Griffin's Cove and thence to Great Fox River, where the proposed Coast road terminates.

NEW TOWNSHIPS.

Subsequently the Crown Land Department instructed Mr. Charles Roy, the Surveyor to proceed with the survey of the proposed townships, which was begun in July and carried on during the fall. The new townships have been named Christie and Duchesnay.

BRANCH LINE TO GASPÉ BASIN.

On the completion of the winter's work, I was requested by the Public Works Department to make my arrangements for continuing the parties previously employed upon the exploration and location of the proposed branch road.

In June, I accordingly despatched one party under Mr. W. Fergusson, explorer, to Gaspé Basin, and another under my assistant, to Grande Vallée des Monts on the St. Lawrence, instructing them to make a preliminary examination of the country between those two points, and to pass as much as possible through the valley of the North West or Dartmouth River.

Serious obstacles were met by both, and especially by the latter, in the traverse from the St. Lawrence to the Dartmouth; finally the probability of a passage was ascertained.

On the 6th of July, my assistant began his field work from the St. Lawrence; on the 12th I began mine from the basin. Having lost 19 days by rain, we completed the work on the 5th of September.

LENGTH OF BRANCH LINE.

The length of branch road located, opened, blazed, levelled, and chained, was 50.49 miles, of which

13.11 miles from Catholic Church of Gaspé Basin, round by the Bluff to the Grande Vallée des Monts, through the forest, (with the exception of 3 miles at and above Anse aux Cousins, on the South side of the north-west arm of Gaspé Bay,) and

37.38 miles from Annett's saw-mill at the latter place, by the Portage road, to the church at the basin.

90 miles of the Branch Road pass through the Seignior of Grande Vallée des Monts.

BOTH LINES.

The full length of line located during the winter and summer amounts to 180 9/16 miles, of which 41 1/2 altogether are across seigniories, and the remainder on Crown Lands.

GENERAL FEATURES OF THE COUNTRY ALONG MAIN LINE.

In describing the general features of the country traversed by the main road line, along the South Shore of the St. Lawrence. I shall repeat part of what has been already stated in my report of the 23d of last March, availing myself at the same time of the information contained in Sir Wm. Logan's Geological Reports respecting the Gaspé Peninsular. (See Reports for 1844-5, 1857-8.)

CAP DE CHAT TO TOURELLE.

There is an excellent road, for the first 13 miles across the Township of Cap de Chatte, the Seigniorie of Ste. Anne des Monts, and part of the Township of Tourelle, passing generally near the shore, along an almost continuous line of settlements; but here the travel is seriously interrupted by the want of bridges across the rivers Cap de Chatte, Grande Ste Anne, and Petite Ste Anne.

In these localities, where the extent of level land is greater than along other parts of the line, there is a large agricultural and fishing settlement, with church, school, post offices, mills and trading establishments. The first 3 ranges of lots, which are partly level, partly hilly, are either settled or occupied.

In the valleys of the Chatte and the Ste. Anne, much of the soil consists of drift clay and sandy loam of a good quality. On the heights, from the St. Lawrence to the range of the Notre Dame Mountains, at 12 miles in the rear, the soil is chiefly sandy loam of a lighter quality, wooded with fir balsam spruce, and white birch, with white pine and cedar. The timber on the low lands, which is nearly of the same description, is intermixed with maple, ash, poplar, &c., and is also of a larger size.

RIVER CHATTE.

The River Chatte, which is navigable for canoes, for a distance of about 32 miles, runs across the range of mountains already named and cleaves them to their very base. The whole area unwatered by this stream is upwards of 800 square miles, half of which lies to the South of the great mountains, or among them.

GRANDE STE. ANNE RIVER.

The Grande Ste. Anne River, which reaches the base of the same mountain range at a distance of about 13 miles from its mouth, may be ascended in canoes for a distance of nearly 32 miles; it drains an area nearly equal to that drained by the Chatte.

Lumbering operations were carried on for some years upon both streams by Mr. Price, but, the supply of pine having failed, they have been discontinued.

MATANE AND CAP DE CHATTE ROAD

The new road from Matane to Cap de Chatte, which was begun in 1857 and opened throughout in 1860, was almost impassable until last fall, notwithstanding which it has given a great impulse to the colonization of this section of country. Within the last six years, no less than 14 miles have been settled along this road which was greatly improved during the latter part of last year.

From Matane down to Cap-de-Chatte, a distance of about 45 miles, the breadth of country more or less fit for colonization, between the St. Lawrence and the Notre Dame Mountains, is about 22 miles at the Matane River, whence it diminishes eastward to 12 miles, at the Chatte and Ste Anne Rivers.

The Matane, which measures a distance of about 53 miles from its outlet to the first three lakes at its head, is supposed to drain an area of nearly 800 square miles.

NOTRE DAME MOUNTAINS.

The range of the Notre Dame or Shick-Shock Mountains, which begins at the Matane and runs nearly east and west magnetically, is about 2000 feet in height, and two miles in breadth, at its western termination. At the Chatte, it increases to 3500 feet in height and to six miles in breadth. At the Ste. Anne, where it seems to split—one portion running towards the south-east and the other a little to the north of east—one of the most elevated

summits, called Mount Albert, attains an elevation of 3778 feet. From the latter stream, the northern portion of the range, which reaches a height of 4000 feet near the head of the Marsouin River, continues to the rear of Mont Louis, until it strikes the River Magdalen, with a breadth of about $1\frac{1}{2}$ miles, at about 17 miles from the St. Lawrence; thence from the south side of the Magdalen, with heights rising from 1500 to 2000 feet, it is subdivided into a series of parallel ridges, cut transversely by the deep gorges of north and south flowing streams, until it reaches Cape Gaspé, where it terminates with cliffs 700 feet in height. It occupies the most of the space between the St. Lawrence, on the one side, and the Bay of Gaspé and the Dartmouth River, on the other side.

From the Magdalen westward, the summits of the highest peaks are bare rock. West of Mount Albert, on the less elevated portions, but on the highest plains, the principal growth is dwarf spruce with a small proportion of white birch of diminutive size, growing widely apart; the intervening surface being covered with tall ferns. At a lower elevation, the soil supports a mixed growth of larger size, consisting of a very open bush of spruce, white and black birch, cedar, and some white pine. East of Mount Albert, which is a vast bare rock, the range towards the Magdalen is generally destitute of vegetation; the rocks of a pale green colour, are generally hard, close textured and silicious, on the summits of the highest peaks, near the Chatte Mount Albert. Barn shaped and Conical mountains are composed of igneous rock or trap; Table topped mountain, another of the most elevated peaks, and belonging to the same range, is composed of intrusive rock, and occupies an area of 72 square miles, the greater part of which is bare rock.

CAPE GASPÉ AND DARTMOUTH.

The limestones and calcareous shales which occupy the whole of the promontory of Cape Gaspé, also skirt the north-east bank of the north-west arm of Gaspé Bay and the Dartmouth River.

COAST.

From Cap de Chatte to Tourelle, the banks of the St. Lawrence vary from 12 to 60 feet in height.

Between Tourelle and Great Fox River, the coast is flanked by an almost continuous series of cliffs towering from 100 to 400 feet in height, interrupted at intervals of from three to six miles by numerous streams descending from the south. These are walled in on either side by mountain ridges which increase in height as they recede from the shore or from 800 to 2000 feet or more, at distances varying from 8 to 15 miles, where, on the portion west and north of the Magdalen, a somewhat level tract of land, at their base is found, forming what is commonly called the Grande Savanne; this depression or valley, which has been examined, extends from the Ste. Anne, eastward to the Magdalen.

Long stretches of the beach, along the shore, are composed of shaly rock, sand, and gravel; or are scattered over with fragments of rock from the cliffs, and are only partly covered during high water, whilst others remain submerged during low water, but for short distances. This is the route followed by the mail carrier, for the weekly transmission of the mails to and from Cape Rosier and Gaspé Basin. Such points as are covered by water, constantly or only occasionally, when the tide is high, are generally avoided by passing across the spurs of the head-lands or the summits of the cliffs, or by waiting until the tide is partly low.

No continuous line of road therefore is practicable along the beach.

COAST ROCKS.

Between the Chatte and Tourelle, the coast consists of bands of conglomerate limestone, black vituminous shales, and thin calcareous sandstones.

From Tourelle downwards, the cliffs in many places are nearly perpendicular and sometimes overhanging and threatening destruction to the foot traveller at their base. West of the Magdalen, they consist chiefly of frequently disturbed strata of coarse and fine grained calcareous sandstone, in beds of various thicknesses, interstratified with black graphitic or indurated and vituminous shales, and their arenaceous limestones; east of the Magdalen the rocks possess a very uniform lithological character; they consist of black vituminous argillaceous shales, interstratified with thin gray calcareous sandstones, and

thin grey yellowish weathering limestones. Graptolites are found on some of the limestones and in the shales.

Bands of black dolomites, capable of yielding good hydraulic cement, and limestone fit for burning, are occasionally found among the strata, together with an abundance of building and flag stones.

SOIL AND TIMBER ON HIGHLANDS.

The mountains of which these cliffs form the base present, upon their slopes and summits, long stretches of land fit for cultivation and settlement; the most elevated portions are generally covered with a growth of white birch, spruce, and balsam fir, from 6 to 12 inches in diameter, 40 to 60 feet in height, on a good description of light sandy loam; on the less elevated portions and upon the slopes, the same description of timber, but of a larger size, prevails, being frequently intermixed with black birch, cedar, maple, and poplar, from 9 to 18 inches in diameter, by 40 to 50 feet or more in length, and the soil improves in quality, in proportion to the size of the timber and the quantity of earth and vegetable matter, which increase with the decrease of surface elevation above the sea. As far as could be judged in the winter season, from the description and size of the timber and the soil on the roots of overblown trees, the land along the western division of the line is superior to that along the eastern division, where the soil is apparently more stony and gravelly, and of a lighter and drier nature. On the whole, it appears more favourable for cultivation than the lands along the Témiscouata and Saguenay routes, which I examined and reported upon in 1860.

SOIL AND TIMBER ON LOW LANDS.

The valleys of the numerous streams emptying into the St. Lawrence, together with those of their tributaries, are generally narrow, varying from $\frac{1}{2}$ and 1 mile wide at the outlets, to $\frac{1}{4}$ and $\frac{1}{2}$ mile, a short distance southward, say 1 to 4 miles. Larger groves of maple and a variety of hard and soft wood of the description already mentioned, and among these a luxuriant growth of cedar, are found along the margin of the streams and in many of the ravines. The soil, composed frequently of drift clay, is very fertile, the slopes and summits of the highest portions consisting generally of sandy loam.

FISHING SETTLEMENTS.

The various fishing establishments, of which there are no less than 25 along the main line, are to be found near the mouths of these streams at several of which good material can be found for the manufacture of red bricks, and where grain and vegetables of the ordinary description such as potatoes, cabbages, turnips, beets, onions, cucumbers, &c., are raised successfully, the yield being

	Wheat	Oats	Peas	Rye	Barley	Potatoes	
In the valley of River à Martre	20 to 1	20 to 1	15 to 1		18 to 1	15 to 1	cultivation begun 6 years ago.
" " the Marsouin River	15 to 1	28 to 1	13 to 1	15 to 1	14 to 1	20 to 1	" " 4 "
" " Mont Louis.....	16 to 1	22 to 1	15 to 1		20 to 1	18 to 1	old French settlement.
On the heights.....	10 to 1	16 to 1	12 to 1	12 to 1	20 to 1	16 to 1	do "
In the valley Magdalen.....	5 to 1		6 to 1	6 to 1	7 to 1	7 to 1	on some of the poorest land.

The yield at the Magdalen would be as great as elsewhere if properly cultivated.

The wheat sometimes suffers from frost, but this inconvenience will probably diminish as the breadth of clear land increases along the coast.

MANURE.

Although the dung of cattle is not wanting at many of the stations, fish offal is the favourite manure used, owing to the highly fertilizing qualities of the ammonia and phosphate of lime which it contains; it renders the poorest soil productive.

MAPLE SUGAR.

Large quantities of maple sugar are manufactured at all these stations every year.

FISH.

As to fish, the varieties taken consist chiefly of trout and salmon in the rivers and lakes; halibut, codfish, herring and mackerel along the coast.

The average quantity of codfish taken yearly is about 100 quintals or cwt. per fishing boat manned with two men.

At Great Fox River, which is the most prosperous of the fishing stations, there are numerous trading establishments, together with church, schools, post office, and a population of about 400 persons.

FURS.

Valuable furs, such as deer, martin, otter, mink, beaver, red and grey fox, lynx, bear, fisher, are obtained by the settlers and Indians in the forest at not remote distance from the shore. Porcupines, which are abundant, are generally sought for as an article of food by the poorer class.

TIMBER AND SOIL FIVE MILES BACK FROM ST. LAWRENCE.—TIMBER AND SOIL GRANDE SAVANNE.

West of the Magdalen, the soil and timber already described are found for at least five miles southward from the St. Lawrence, after which the country becomes more mountainous and poor as you proceed inland, towards the valley of the Magdalen, where the soil is thin both on the hills and on the flats, the timber consisting of balsam fir, white birch, spruce, and white cedar, until reaching the Grande Savanne where tamarack, black spruce, white birch and balsam fir of small size are found, and where the soil is either wet or sandy and scarcely fit for settlement, especially on approaching the great mountain range of Notre Dame.

PINE.

Pine, for lumbering purposes, is generally scarce; excepting near the Magdalen, south of the Grand Falls, and eastward towards the Grande Vallée des Monts River, where it is reported to be the most abundant. But even there, the quantity, so far as ascertained, is such that it would not suffice for any extensive lumbering operations, beyond the period of a few years.

From the Grand Falls to the Terrace Mountains, a distance of about 12 miles, $\frac{1}{2}$ of the timber upon the slopes of the mountains consists of white pine, large enough in some cases for squared timber, but generally more suitable for saw-logs. The only obstacles to the running of the timber are, one fall of 12 feet another of 62 feet, and the rapids, near the portage, about five miles from the mouth of the river; by improving these, an unlimited supply of water power could be brought into use, in which case, sawn timber might be floated with safety down to the mouth, from the falls.

Elsewhere, along the other streams, groves of from 200 to 1500 are found at from three to six miles back from the St. Lawrence.

Along the Mont Louis the number of pines may be estimated at 6000, the chief portion of which is in the seigniory. Along the valley of the Gros Mâle the number of pines is about 3000, varying in diameter from 18 to 36 inches, and generally sound.

MAPS OF COUNTRY EXPLORED SHOW DETAILS RESPECTING SOIL, TIMBER, ROCKS, &c.

The particulars respecting soil, timber, rocks, &c. in the different localities too numerous to be detailed in a report, will be found upon the maps which have been prepared, shewing the road location and the topographical features of the entire section of country explored.

DESCRIPTION OF MAIN ROAD LOCATION.

With respect to the location of the proposed coast road, I have selected the best engineering line that could be found in a section of country abounding in every direction with lofty mountains and deep gorges running transversely across the route. It is generally from $\frac{1}{2}$ to 1 mile or more from the St. Lawrence, crosses the streams at the most convenient points for bridging, and passes generally through or near to existing settlements.

Various portions of the line are traced so that one range of lots can be found between it and the coast towards the north, whilst towards the south, from one to four ranges of lots of sufficiently level land, can be laid out.

The line located is much inferior to that of the Metapediae road, with respect to graduation; the number of hills across its course, is as nearly great as upon the Kempt road or upon the Malbaie and Saguenay road. The grades of the different hills at the streams and

ravines, in many cases, will be as great as one in five; a very small proportion of the line passes over level land.

GREATEST ELEVATION OF MAIN LINE ABOVE THE LEVEL OF THE SEA.

The most elevated portions of the route are those across the Santeux Mountain, between Ruisseau à Castor and Ruisseau Vallée, and Grande Coupe or Grand Ruisseau Mountain, between the Magdalen and Grande Vallée des Monts, respectively 759 and 739 feet in height.

NO PASSAGE FOUND AT MONT LOUIS EXCEPT ALONG THE BEACH AND THROUGH THE VALLEY OF ANSE PLEUREUSE OR GRAND MATTE RIVER.

Above and below the Mont Louis which is one of the most mountainous tracts, the mountain ridges are so lofty and impenetrable, that I despaired, at one time of finding my passage. After having sought in vain during several days, I came to the conclusion of turning the mountains, by locating the road around their base, along the beach near the foot of the cliffs, where side-wharfing from three to four feet in height generally, and of about eight feet at other points will be required, viz: for a distance of about $2\frac{1}{2}$ or $3\frac{1}{2}$ miles from above the west side of the cove of the River à Pierre down to the Mont Louis grist-mill or to Pointe-à-Corbeau, in case that the present mill route, which is very hilly, should not be followed; and also for a distance of half-a-mile or more along the west side of the lake commonly called Lac de l'Anse Pleureuse in the valley of the Grand Matte River, more commonly known as River de l'Anse Pleureuse.

LOCATION AROUND COVE OF RIVER A PIERRE.

For about half-a-mile, on both sides of the cove of the River à Pierre, the breadth of beach dry at high water is very narrow; besides which it is scarcely possible to construct any wharfing that would remain unobstructed by gravel sliding from the sides of the cliffs or that could resist the combined action of the waves and ice during heavy gales of wind, especially during the spring and fall of the year.

DETENTION DURING HIGH WATER.

Travellers will therefore have to wait, in order to pass over the bare beach, for two or three hours after the beginning of low tide.

Fragments of rock occasionally roll down from the summits of the vertical cliffs bordering the cove, which would probab'y render it hazardous to pass at night; the mail-carriers and other foot travellers have however been passing here nearly every week, both day and night, for the last 30 years, and no accident to any one has occurred up to the present time.

ROADWAY ON THE ICE.

In winter the ice is stationary, or nearly so, along most of the coast, and occupies the space between high and low water for a breadth of about 50 feet at the narrowest spots, such as that under consideration, and of from 100 to 500 feet elsewhere. Generally a good roadway can be obtained for considerable distances. Such is the present winter route used by horses between Mont Louis and the River à Pierre.

Below Mont Louis, I at first located the road along the beach, from the River Grand Matte down to the Gros Mâle River; finding the route to be too dangerous, I afterwards decided on locating it along the valley of the Grand Matte. This alteration causes a deviation of four miles to the southward.

LOCATION ALONG VALLEY AND LAKE OF GRANDE MATTE RIVER.

In this valley, the river and lake bearing the same name are walled in by lofty and precipitous hills which reach a height of about 900 feet,—their slopes, with a grade of one in three more or less, coming close to the margin of the lake.

On the west side, which is the most favourable, the bank of the lake is steep, and its margin very narrow for about half a mile, for which distance side-cutting and side-wharfing will be required.

The ground on the west side of the lake should be thoroughly examined in summer, in order to ascertain whether a firm footing can be obtained for the foundation of the roadway, *and whether any danger is to be apprehended from the sliding of gravel or stones from the slope of the mountain.*

If there are any doubts of obtaining a safe and permanent roadway along the lake, then it will be necessary to search for another passage across the mountain, between the valley of the Mont Louis and that of the Grande Matte, passing south of the Lac des Olives. Possibly a practicable route might be found in that direction but it is not probable, as we endeavoured to pass that way without having succeeded.

LOCATION OF ROAD AROUND COVE OF RIVER A PIERRE AND ALONG THE LAKE, THE BEST THAT CAN BE FOUND.

If the route proposed for overcoming the obstacles above and below the Mont Louis is not considered sufficiently safe, or should the passage along the lake be found impracticable, it is exceedingly doubtful whether any other route can be found: in which case the project of constructing a continuous highway down to Fox River would have to be abandoned, unless by locating the western end of it 15 miles further to the south, along the Grande Savanne. This, in winter lies concealed beneath eight feet of snow, and is embosomed amongst mountains sometimes capped with snow in summer, and the gorges, leading to it, from the gulf settlements, would render the construction of routes to the main artery, not only difficult and expensive, but in many cases impracticable.

The one selected will offer the greatest advantage for the carriage and distribution of the mails, besides which it will be accessible in case of shipwrecks.

HARBOURS CONNECTED BY COAST ROAD.

It connects the Magdalen, the Mont Louis, and the Ste. Anne, which are the only harbours along this part of the coast.

DESCRIPTION OF HARBOURS.

The Magdalen is the safest and is the most frequented by American fishing schooners. It would be available for larger vessels, were it not for a sand bar in front; over this bar there is a depth of about 17 feet at the ebb of the tide.

The Mont Louis offers an excellent shelter for small coasting vessels.

The Ste. Anne where the depth of water is greater than in the others, is obstructed at its entrance by a dangerous rock which renders its egress and ingress difficult. The depth of water over the bar in spring tides, is said to be about 12 feet.

ECONOMIC MATERIALS RENDERED ACCESSIBLE BY COAST ROAD.

As the line passes over a considerable extent of lands of a good quality for settlement, and as it will, by the means of a few branch roads, afford access to the valuable quarries of green, red, blue, and brown striped serpentine, spreading over an area of probably 10 square miles on Mount Albert, and also to the rich and abundant chronic iron deposits, on the same mountain 24 miles back from the mouth of the Marsouin and 34 from that of the Ste. Anne, following the valleys of those streams; also to the fine roofing slates, tile stones, and flag stones along the former stream and its main tributary called Henly's Brook, from 2½ to 7 miles back from the St. Lawrence, the whole of which is described in the Geological Report for 1854.—there is not the least doubt that its construction will lead to the settlement of the adjacent lands, provided free grants are made. Several persons already have selected lots along the line of chaining.

DESCRIPTION OF BRANCH ROAD.

BRANCH ROAD TO GASPÉ BASIN.

I shall now describe the proposed branch road from Grande Vallée des Monts to Gaspé Basin. Twenty-seven and a quarter miles from the basin westward pass for a short distance along the north west arm of Gaspé Bay, and thence through the valley of the north west or Dartmouth River, on either side of which there is a considerable quantity of land fit for cultivation. The flats of the river, which vary from ¼ to 1 mile or more in width, are very productive; the adjoining mountain slopes and terraces, although of a drier and more stony nature, present generally good soil, the average quality being what may be termed good sandy loam.

MILL SITES.

Along the river in the above distance there are some excellent mill-sites. The prevailing sort of timber is balsam fir, spruce, black and white birch, poplar, and cedar. Pine is scarce, most of it having been already cut by lumberers. The most valuable timber remaining is spruce from 12 to 24 inches in diameter, and from 50 to 80 feet in length.

The summits of the mountains which skirt the stream on both sides, appear to have an elevation of about 1500 feet above the level of the sea.

Nineteen miles of the above distance pass over level or undulating land, the remainder being across hills, some of which present ascents and descents as steep as 1 to 5.

The first 9½ miles from the basin are on the south side of the north-west arm and of the Dartmouth.

PORTAGE ROAD AT GASPÉ BASIN PREFERRED TO ROAD AROUND BLUFF.

Starting from the basin, two routes were traced for the first two miles; one from the Catholic Church around the Bluff and the other along the present Portage Road about half-a-mile west of the church and nearly opposite the steamboat landing, both lines connecting at Annett's saw-mill, at l'Anse-aux-Cousins, on the south side of the north-west arm. The Portage road as terminus is said to be preferred by a majority of the inhabitants.

From this mill the line passes for about three miles through the settlements as far as Stanley's saw-mill; thence continuing along the south side of the north-west arm, it reaches and crosses the Dartmouth River at the 9½ mile; thence it follows the river upon its north side and traverses it a second time at about ⅓ of a mile above the falls, near the 16½ mile; thence it follows on the south side, until it reaches and crosses the stream a third time, near the 27½ mile.

The remaining 20½ miles to Grande Vallée des Monts pass over a more mountainous region, and offer little inducement for colonization, owing to the small extent of level land on either side of the line.

ROAD GRADE.

The road grade for about half the distance is either level or undulating, and for the remainder it is composed of a series of short ascents and long descents varying from 1 in 5 to 1 in 10, to within the last two miles which are generally level to the St. Lawrence.

Fir, spruce, and white birch from 6 to 12 inches in diameter, and 40 to 50 feet in length prevail on the high lands and cedar, mixed with the preceding, on the low land; the latter measuring from 12 to 24 inches in diameter by 30 to 40 feet in length.

The soil for half the distance from the third crossing of the Dartmouth is sandy loam of a good quality; the remainder, towards Grande Vallée des Monts, is of an inferior quality, being more gravelly and stony.

LOCALITIES DESCRIBED IN GEOLOGICAL REPORTS.

The description of the geological features of the district traversed by the proposed new routes, is given in the reports of Sir W. Logan for 1844-5, 1857-8, before referred to, for the following localities, viz:

The coast from Cap Rosier to Matane and upwards.

The river Cap de Chatte across to the Cascapediae and thence to the Bay des Chaleurs, a distance of about 74½ miles on a straight course, or of 111 miles along the windings of the course followed through the valleys of the streams, traversing the range of the Notre-Dame or Shick-shock mountains near the sources of the same.

The rivers Grande Ste. Anne and Marsouin up to the same mountain range.

From Grand Etang to the Dartmouth River, and from Griffin's Cove along the new government road to the Bay of Gaspé.

RELATIVE ADVANTAGES OF BRANCH ROAD AND COAST ROAD.

The distance to Gaspé Basin by the Branch Road Location is about 10 miles shorter than by the present mail route *via* Griffin's Cove and Peninsula.

In winter 25 miles out of the 48 might be travelled probably upon the ice of the Dartmouth, the depth of water in which was found to vary from to 36 inches.

Although the inland route is somewhat superior to that along the St. Lawrence as regards grade and quality of soil, the inducement to settle along the latter will be greater,

owing to the advantage of fishing, the facilities afforded by the numerous existing settlements and trading establishments, and the probability of the road being kept open in winter.

It might be more expedient therefore to construct the inland route as a colonization road, and the St. Lawrence route as the main highway.

CLIMATE AND POPULATION.

Having taken observations from the commencement of the field operations respecting the climate, depth of snow, population, &c., I was surprised during the coldest months to find such mild weather and so little snow, when I anticipated the very reverse.

TEMPERATURE, COLDEST MONTHS.

The highest, lowest, and the average temperature since the 27th of January were as follows, viz: for January, -4° , 29° ; February, -24° , 48° , av. 15° ; March, 0° , 48° , av. $21\frac{1}{2}^{\circ}$; April, 5° , 47° , av. 33° Fahrenheit.

SNOW AND RAIN.

From the 1st of February, snow fell for 17 days, and rain during 7 days.

The depth of snow upon the ground on each side of the road line, varied from 3 to 4 feet, and further inland on approaching the Shick-Shock mountains, above the Magdalen, it increased from 4 to 8 feet.

In the valleys where the land is cleared, the snow disappears towards the 7th of May, and where it is not cleared, towards the 15th; on the highlands through the forest, it disappears between the 15th of May and the 1st of June.

Towards the source of the Magdalen and westward, snow is seen upon the highest summits of the Notre Dame or Shick-shock mountains in July and August.

TEMPERATURE, WARMEST MONTHS.

During the warmest months the average temperature was, in May $\times 45^{\circ}$; June $\times 57\frac{1}{2}^{\circ}$; July $\times 64\frac{1}{2}^{\circ}$; August $\times 61\frac{1}{2}^{\circ}$; September $\times 53^{\circ}$; October $\times 40\frac{1}{2}^{\circ}$.

SNOW AND RAIN.

Snow fell for 2 days and rain for about 40 days; 21 of which in July and October which were the rainiest months (see detailed register of temperature, &c., appendix, No. 1.)

Agricultural operations begin generally towards the 15th of May, and the crops are housed towards the 15th of October.

POPULATION.

The local population of the isolated settlements to be connected with each other and with the provincial highway terminating at Ste. Anne des Monts, by means of the projected routes, may be stated as follows: Cap de Chatte, 450; Ste. Anne des Monts, 869; Mont Louis, 200; Grande Vallée des Monts, Anse du Grand Etang and Sydenham north, 304; Sydenham south, 81; Fox, 588; Gaspé Bay north, 316; Gaspé Bay south, 520; Cap Romier, 1060.—Total 4385 as per census returns of 1861.

DRIED COD FISH EXPORTED.

So far as I could ascertain, the total quantity of dried cod-fish exported from the above places, the same year, was about 37,000 cwt.

Further details respecting the population, the agricultural and fishing produce, &c., of the various fishing stations along the coast, are given in the census sheets, appendix No. 2.

APPROXIMATE ESTIMATE.

The probable cost of the proposed main road from Cap de Chatte to Great Fox River, and of the proposed branch road from Grande Vallée des Monts to Gaspé Basin, may be stated as follows:

Main road, western division, section No. 1, 13.20 miles in length.				
Bridge across River Cap de Chatte, 1154 feet long, near outlet...				\$12,956.76
" " " Grande Ste. Anne, 953 "	"	"	"	10,241.02
" " " Petite Ste. Anne, 200 "	"	"	"	600.00

2,307

Total—\$23,797.78

or an average cost per mile of \$1832.86.

The cost of bridging the two former streams near their outlets being much greater than what I was at first led to suppose, it would be as well probably to defer their construction until the completion of the main road, and in the mean time to establish a scow-ferry on each.

If they were bridged at about 1 mile above their outlets, the cost would be reduced to \$11,500, but the distance to be travelled would be increased by 4 miles, and such a location would prove highly inconvenient to the public.

The local population to be benefited immediately by the use of the ferries or the construction of the bridges, comprises about 1300 persons.

WESTERN DIVISION.—Section No. 1, probable cost brought forward			\$ 23,797.78
Do do do No. 2, 64.22 miles in length.			
From Ste. Anne des Monts to Great Magdalen River.....	\$ 64,333.30		
Total length of bridging 3,568 feet in 64 bridges			
Average cost per mile, \$1,001.63.....			
EASTERN DIVISION.—50.78 miles in length			
From Great Fox River to Great Magdalen River.....	\$ 41,972.70		
Total length of bridging, 4,294 feet in 73 bridges			
Average cost per mile, \$826.56.....			
Total probable cost of proposed main road, 115 miles in length, exclusive of section No. 1 on the Western Division, and comprising 137 bridges and 7862 lineal feet of bridging...	\$106,306.00	\$106,306.00	
BRANCH ROAD 48.11 miles in length.....			
From Grande Vallée des Monts to Catholic Church Gaspé Basin	\$ 47,036.00	\$47,036.00	
Total length of bridging 4,206 feet in 83 bridges.....			
Average cost per mile \$977.68.....			
Total probable cost of the whole work when fully completed, for the entire distance of 176.31 miles, on the main road and branch road. Total number of bridges 223.....		\$177,139.78	
Total length of bridging on both routes 14,375 feet.....			
Average cost per mile, \$1004.71.....			

The above estimate, which comprises a sum of 15 per cent for superintendence and contingencies, is for a road of nearly the same character as that of the Metapedia Road, maintaining the most favourable gradients which the natural features of the country would permit, such being my instructions. The breadth of clearing is intended to be 60 feet, and that of the road formation 20 feet on favourable ground; this breadth is to be reduced where expensive side cutting or rock cutting may occur.

The average cost per mile being greater than was expected, it is proper to observe, that although a considerable portion of the road will cost little more than \$600 or \$700 per mile, yet the amount of bridging and side logging on other portions is so great, that the average sum for the whole is increased to about \$1000.

The estimates forwarded herewith shew in detail the description and grades of the ground, and the nature of the work to be done with its probable cost on each mile. The construction of the work proposed will confer great advantages both to existing and future settlers and to the public at large. Along the main or coast road, at every 4 or 5 miles, in summer or in winter, the traveller will be sure to find all the requisites of food and shelter at moderate prices, an advantage not to be found on the present route which connects the Bay des Chaleurs with the St. Lawrence.

It must not be forgotten, however, that the course of the proposed highway lies across numerous steep and lofty hills, such as those that are met with on the Kempt and the Malbaie and Saguenay roads.

For this reason, whatever its advantages may be in other respects, it is not likely to become a favourite route, with through-travellers to and from Gaspé and the Bay des Chaleurs.

The route around by the Matapedia road, now in progress of construction, although longer by 41 miles, will generally command a preference; because the Matapedia link, when completed, will be far superior, with respect to grades and fast travelling, to the link of road now proposed to be constructed between Ste. Anne des Monts and Great Fox River, together with its branch to Gaspé Basin.

If it is decided to proceed with the work, it should be commenced from each end of the line, and let in small sections of $\frac{1}{2}$ mile in length, as is already practised on the Matapedia road, in order to give the inhabitants of the locality a chance of undertaking a portion of it.

Excellent workmen, capable of performing the various portions of the work required, can be found at Cap de Chatte, Ste. Anne des Monts, Great Fox River, and elsewhere along the line.

The management of the work, owing to the many difficulties to be overcome, should be entrusted only to persons of tried skill and experience.

In concluding, I beg to acknowledge the useful services of my assistant Mr. Allan G. Scott, who located and opened 70 miles of the line in a very judicious and satisfactory manner.

The explorers, draughtsmen, and others who assisted in carrying on the survey, or in performing other service connected with the same, are deserving of much credit for their efforts at all times, to expedite the portion of work allotted to each.

The maps and profile together with the specification and other papers, which are not quite completed, will be forwarded shortly.

I have the honor to be,

Sir,

Your most obedient servant,
(Signed,) G. F. BAILLARGE.
Superintendent Engineer.

SCHEDULE G.—MILLS ON WESTERN DIVISION.

TABULAR STATEMENTS from G. F. Baillairgé's Maps of the Gaspé and St. Lawrence Exploration, respecting Water Power, Population, Temperature, Agricultural and Fishing Produce, Economic Materials, and the comparison of the two Routes from Quebec to Gaspé by the Metapédicac Road and by the Gaspé and St. Lawrence Route.

Description.	Where Situated.	Proprietor.	Remarks.
Grist Mill.....	Near Cap de Chatte.....	Louis and Joseph Roy.....	In operation.
Saw Mill.....	On River Cap de Chatte, six miles up stream.....	William Price.....	Not in use.
Saw Mill.....	On Ruisseau du Naufrage, about four miles above Grande Rivière Ste. Anne.....	Madame Michaud.....	In operation.
Saw Mill and Grist Mill.....	Near outlet of Petite Rivière Ste. Anne.....	Jean Baptiste Sasseville.....	In operation.
Saw Mill.....	Near outlet of Ruisseau à Patates.....	Jean Baptiste Sasseville.....	Not in use.
Grist Mill.....	On St. Lawrence, one and three quarter miles above outlet of River Mont Louis.....	Donald Fraser, Seigneur.....	In operation.
Grist Mill (horse power).....	At Mount Louis.....	François Lapointe.....	In operation.

MILL SITES ON WESTERN DIVISION.

LOCALITIES.		Fall available.	Depth of Water in Winter.
Petite Rivière Ste. Anne. In Second Range.....		12	Water 3 ft. deep. Lowest water, Aug. 15 to Oct. 15.
Ruisseau Caster. Near St. Lawrence.....		16	Water 1 ft. deep in winter.
Ruisseau Vallée. At two arpents from St. Lawrence.....		8	do do do
Rivière à Marteau. At two miles back from St. Lawrence.....		10	do do do
Rivière Marsouin. At four miles back from St. Lawrence.....		12	do do do
Rivière Petite Magdeleine. Near St. Lawrence.....		10	do do do
Rivière Grande Magdeleine. At the Falls near the Portage, at about five miles from the St. Lawrence.		Supply unlimited. 1 Fall of 12 ft. 1 Fall of 62 ft.	Water 3 to 5 ft. deep in winter.

REMARKS.—The breadth of the various streams along the coast is generally from forty to sixty feet, excepting the Great Magdalen, which is about two hundred feet wide one mile above its outlet.

More or less water power may also be found on the other streams, along the entire route on both divisions; water power is abundant along the North West or Parfench Rivier, followed by the proposed French Line of Road from Gaspe Basin to Grande Vallée des Monts.

The only mill observed on the proposed Branch Line was Annett's saw mill, at l'Anse-aux-Cousins, on the South side of the North-West Arm of Gaspé Bay, at about two miles above the Basin.

No mills were observed on the Eastern Division of the Main Road.—G. F. B.

WESTERN DIVISION.

POPULATION of the Fishing Settlements from Cap de Chatte to Great Magdalen River, and the quantity of Cod Fish taken by the Residents at each Station in 1861.

STATIONS.	Population.		Number of Fishing Boats.	Cod Fish taken.		REMARKS.	
	Number of Families	Number of Persons.		Average quantity each Boat.	Total Quantity.		
				Cwts.	Cwts.	Cwt.	Cwt.
St. Norbert du Cap de Chatte...	80	450	32	78	1300 1200	Dried (1 dried.-2 fresh fish) Pickled in brls., 1 brl.-2cwt.	
St. Anne des Monts.....	125	780	129	33½	2800 1530		
Ruisseau Cartor.....	1	3	1	100	100	Dried.	
Ruisseau Vallée.....	1	6	1	100	100	Dried.	
Rivière à Martres.....	2	12	2	110	200 20	Dried. Pickled.	
Rivière Marsouin.....	3	18	4	90	300 60	Dried. Pickled.	
Rivière Claude... ..	4	20	3	41½	100 24	Dried. Pickled.	
Rivière à la Pierre.....	1	9	5	96	380 100	Dried. Pickled.	
Rivière Mont Louis.....	30	200	31	87	1900 800	Dried. Pickled.	
Rivière d l'Anse Pleurense.....	2	10	1	105	45 60	Dried. Pickled.	
Rivière Grande Magdeleine.....	10	57	7	72	306 200	Dried. Pickled.	
Total	259	1565	216	.....	11525		

EASTERN DIVISION.

Population of the Fishing Settlements from Cape des Rosiers to the Great Magdalen River and the quantity of Codfish taken by the residents at each Station in 1861.

STATIONS.	Population.		Number of Fishing Boats.	Codfish taken.		REMARKS.
	Number of Families	Number of Persons.		Average quantity each Boat.	Total Quantity.	
				Cwts.	Cwts.	
Cap des Rosiers.....	56	325	30	90	2700	{ The portion of Township bordering the St. Lawrence.
Griffin's Cove.....	43	280	28	100	2800	
Great Fox River.....	62	400	35	110	3850	
Little do	9	50	8	100	800	
Petit Cap.....	12	85	6	95	480	Family resides at Echouerie, $\frac{1}{2}$ mile West.
Cap au Serpent.....	1	2	1	60	60	
Pointe Jaune.....	5	22	4	50	200	
Anse à Valteau.....	3	20	8	100	800	
Ruisseau aux Echallottes.....	0	0	1	80	80	
Anse du Grand Etang.....	1	2	20	140	2800	
Pointe Sèche.....	3	130	14	100	1400	
Grand Cloridorme.....	10		9	80	720	
Petit do	8		8	80	640	
Petite Vallée des Monts.....	3		3	70	210	
Grande do	11	80	30	80	2400	
Total	227	1420	205	.....	19940	

N. B.—The quantity of Codfish for the Bay of Gaspé, from Grand Grève to Gaspé Basin inclusive, is about 6,000 cwts.

G. F. B.

COUNTY OF GASPÉ.

Population of the County of Gaspé exclusive of the Magdalen Islands as per Census Return of 1861.

Cap de Chatte	450	Township.
Cap des Rosiers.....	1060	do
Douglas.....	988	do
Fox	588	do
Gaspé Bay, North.....	316	do
Do South.....	520	do
Grand River.....	879	Seigniory.
Grande Vallée des Monts.....	304	do
Anse du Grand Etang.....		do
Sydenham, North.....		Township.
Malbaie.....	1077	do
Mont Louis.....	200	Seigniory.
New Port.....	415	Township.
Pahos.....	754	Seigniory.
Percé.....	2720	Township.
Ste. Anne des Monts.....	869	Seigniory.
Fydenham, South.....	81	Township.
York	205	do
Total population.....	11426	

MEAN TEMPERATURE

Along the Coast and at Gaspé Basin.

Months.	Degrees Fahrenheit.	REMARKS.
February -	+ 15°	Snow 17 days.
March	+ 21½°	Rain 7 days.
April	+ 33°	Depth of snow near road line, 3 to 4 feet.
May	+ 43°	
June	+ 57½°	<div> <div></div> <div>Snow 2 days.</div> <div>Rain 40 days.</div> </div>
July	+ 64½°	
August	+ 61½°	
September	+ 53°	
October	+ 40½°	

Snow.—The depth of snow upon the ground, on each side of the road line, varied from 3 to 4 feet. Inland, on approaching the Shick-Shock Mountains, above the Magdalen, it increased from 4 to 8 feet. Towards the source of the Magdalen and westward, snow is seen upon the highest mountains in July and August. In the valleys, where the land is cleared, the snow disappears towards the 7th of May; and where it is not cleared, towards the 15th, on the highlands throughout the forest, it disappears between the 15th of May and the 1st of June.

G. F. B.

WESTERN DIVISION.

Total and average yield of Grain, and quantity of Maple Sugar made in 1861, at the various Settlements along the Coast.

Names of Localities.	BUSHELS.												lbs.	REMARKS.		
	Wheat.		Oats.		Pease.		Rye.		Barley.		Potatoes.		Sugar.			
	Total Produce.	Av. per Bushel.	Total Produce.	Av. per Bushel.	Total Produce.	Av. per Bushel.	Total Produce.	Av. per Bushel.	Total Produce.	Av. per Bushel.	Total Produce.	Av. per Bushel.				
(a) Cap de Chatte, St. Norbert.....	1100	.....	2000	.....	800	.....	1200	.....	2000	.....	10000	.....	3200	Settlement begun 30 years ago, by Louis and Joseph Roy.
(b) Ste. Anne des Monts.....	1900	.....	3400	.....	1200	.....	2000	.....	3400	.....	15000	.....	4875	Settlement begun 30 years ago, by Jean Re. Sackville, and others.
Rivière à Martres Valley.....	40	20	40	20	30	15	.....	.....	300	13	600	15	1600	Cultivation begun 6 years ago, by Peter Maloney and Jesse Gaze.
Rivière Marsouin Valley	60	15	80	28	40	13	.....	16	400	14	800	20	1200	Cultivation begun 4 years ago. Settled about 30 years, by P. Henley.	
Rivière Claude Valley .....	.....	.....	.....	.....	10	34	110	10	33	84	300	74	1500	New Settlement begun by Hubert Castagné.
Rivière à la Pierre Valley .....	.....	.....	12	12	.....	.....	.....	.....	18	9	184	14	2300	New Settlement begun by Pellet Ouellet.
River Mont Louis Valley	{ 350	16	.....	22	15	{ 276	{ 270	.....	.....	20	.....	18	{ 3000	{ Old French Settlement. Sugar made on Seigneurie and on Crown Lands.
River Mont Louis Heights		10	.....	18	.....			440	.....	5800	10	.....			
River Atso Pleureuse Valley.....		30	10			20	12	200	112			1760	Settled by James Henley.
River Grand Magdalen Valley		137	6			71	6	73	6	7			607	Settled for several years. Cultivation very indifferent and on some of the poorest land.
Total	3617	.....	5732	.....	2527	.....	3653	.....	6671	.....	33,041	.....	26,326	

(n)—The Agricultural Population, and the area of Cultivated Land in this portion of the Township of Cap de Chatte, is increasing rapidly every year. Agriculture, being more remunerative than Fishing, is preferred by the majority of the population. Hunting is very seldom practised, although wild animals are more or less numerous. St. Norbert is destined to become a large Parish.

Although Yellow and White Pine are still to be found along the valley of the river Cap de Chatte, the lumbering operations formerly carried on upon the river, by Mr. Price, have been discontinued, owing to the scarcity of Pine. The want of a scow, ferry, or bridge across the river Cap de Chatte is a great drawback to colonization. A great number of lots in the 2nd and 3rd ranges, have been taken by persons who do not settle thereon, and the same being sought for by persons who are ready to cultivate them and to reside thereon, but whose applications are refused, owing to the former, the Crown Land regulations should be enforced, in order to give equal justice to all parties.

(b)—The Parish of Ste. Anne des Monts comprises part of the Township of Cap de Chatte, of the Seigniory of Ste. Anne des Monts, belonging to John LeBoutillier, M.P.P., and part of the Township of Touraille. This Parish, of which St. Norbert may be termed the offspring, is rising rapidly into importance. Fishing is no longer the favoured pursuit, agricultural operations being more remunerative. The 1st range is generally thickly settled along the St. Lawrence. The lots on the 2nd and part of the 3rd ranges have been already taken, and are in course of being settled. A scow, ferry, or bridge across the Grand Rivière Ste. Anne would be a great inducement to colonization. Lumbering operations were carried on some years ago along this river, but have been discontinued, owing to the scarcity of Pine. Many of the lands of the 2nd and 3rd ranges are taken by persons who do not settle thereon, which prevents bona fide settlers from occupying these lands, as at Cap de Chatte.

G. F. B

Catalogue shewing the varieties of Trees found in the Township of Cap de Chatte and several other sections of the country explored.

NAMES.			SizE.	REMARKS.
ENGLISH.	FRENCH.	BOTANICAL.		
Yellow Pine.....	Pin Jaune	Pinus Variabilir	inches. 27 to 36 X 80 to 90	{ On stony or gravelly soil. Fit for saw logs and squared timber. On light soil, sandy loam—good for masts.
White Pine	Pin Blanc	Pinus Strobus.....	24 to 30 X 70 to 80	
White or Sea Spruce	Epinette Blanche	Abies Alba.....	15 to 18 to 24 X 70 to 80....	
Grey Spruce	Epinette Grise ou Epinette de Savanne	Abies Nigra (Poixet)	9 to 18 to 18 X 60 to 70 ...	do do — do
Red Spruce or Tamarac	Epinette Rouge.....	Abies (Larix) Americana	18 to 24 X 60	do do —for saw logs, &c.
Black or Double Spruce	Epinette Noire	Abies Nigra (Michaux).....	9 to 10 to 15 X 30 to 40 ...	{ On light soil, sandy loam— do
Fir Balsam.....	Sapin	Abies Balsamea.....	6 to 9 to 12 X 40 to 50 to 60	{ Abundant on dry soil.
Red Cedar	Cedre Rouge	{ Thuga Occidentalis	20 to 24 to 36 X 40 to 50 to 70	{ On heavy soil, clay, low land—good for shingles, frames, fence rails, &c.
White Cedar	Cèdre Blanc.....		15 to 18 to 24 X 40 to 50....	
Hard or White Maple	Erable Blanche.....	Acer Saccharinum	12 to 15 X 50	On rich soil—clayed loam.
Grey Maple	Erable Grise	{	15 to 18 X 60	do — do
Soft Maple.....	Plaine.....		12 to 15 X 40 to 45	do — do
Striped Maple.....	Bois Barré.....	Acer Rubrum	8 to 10 X 20 to 30	do — do
Black or Red Birch	Merisier Rouge.....	Betula Lenta.....	15 to 24 to 36 X 60	do —good for cabinet work.
Yellow Birch	Merisier Blanc.....	Betula Excelsa	12 to 15 X 60	do —generally found with hard maple.
White Birch	Bouleau Rouge	Betula Populifolia	6 to 10 to 18 X 40 to 50 ...	On light soil.
Canoë Birch.....	Bouleau Blanc	Betula Papgracea.....	10 to 15 to 24 X 50 to 60....	do
Balsam Poplar	Peuplier	Populus Balsamifera.....	12 to 15 to 30 X 60 to 70....	On dry soil on high lands.
Aspen or White Poplar.....	Tremble	do Tremuloïdes.....	7 to 8 to 12 X 30 to 40	On damp soil on low lands.
Black Ash	Frêne Noir.....	Fraximes Sambricifolia.....	10 to 12 X 50 to 60	do saplings good for hoops.
White Ash	Frêne Blanc ou Frane Frêne....	do Acuminata	10 to 12 to 15 X 40 to 50 ...	Good for handspikes, carriage frames.
White Elm.....	Orme	Ulnus Americana	20 to 24 to 30 X 50 to 70....	On good soil—good for wheel naves, &c.
Mountain Ash.....	Cormier, Maskouabina	Pyrus or Sorbus Americana.....	6 to 10 X 15 to 20	Fruit scarlet—found generally on good soil.
Wild Red Cherry	Merise.. ..	Cerasus Pensylvanica, or Pru- nus Borealis	6 to 8 X 30 to 40	On light dry soil.
Alder.....	Aulne	Alnus Incana	3 to 5 X 12 to 20	On borders of ponds, river, lakes, &c.
Mountain Maple Shrub.....	Bois Boc.....	Acer Spicatum	1½ to 2½ X 10 to 15	Indication of good soil generally found in the valleys of all the streams.
Hazel Nut, or Beaked Hazel ...	Coudrier Noisetier.....	Corylus Americana	1 to 2½ X 6	On rich soil.
Dices Palæstris.....	Bois de Plomb.....	Moose or Leather Wood	1 X 5	On damp soil.
Willow	Saule Jaune et Blanc.....	Salix Lucida	8 to 9 X 15 to 20.....	
Wobble-bush	Bois d'original.....	Vilburnum Lantanoidet	3 to 4 X 15 to 20.....	
Ground Hemlock	Bois.....	Taxus Canadensis .....	.....	Abundant amongst trees on low ground.
High Cranberry.....	Pimbina.. ..	Vilurnum opulus .....	.....

N. B.—The above shews the description and size of the various species met with throughout the Exploration.

WESTERN AND EASTERN DIVISIONS.

Fisheries.—(See Report of P. FORTIN, Esq., on Fisheries in Gulf of St. Lawrence for 1859.)

Cod-Fish.—The common Cod (*Morhua Vulgaris*), is found in great quantities along the coast from Cape de Chatte to Paspebiac, and even as far as New Richmond in the Baie des Chaleurs.

It appears at uncertain dates, generally between the 10th May and the 1st of June, but sometimes later.

It gene ally stays in the sea at a depth of from 25 to 60 fathoms; it is seldom taken in more than 75 fathoms; but when the instinct of reproduction is felt, it approaches the shore in pursuit of the caplin, of which it then makes its chief food, and remains six or eight weeks in twelve, eight, and even five fathoms.

Cod-fishing along the coast is generally carried on in 20, 30, or even 40 fathoms, the boats being manned by two men, each of whom has two lines.

The months of June, July, and August are the most favorable for the cod fishery.

Herring, caplin, and launce are the favorite bait used; these are taken with seines, when they come near enough to the shore, or with nets in deeper water.

The fishing from the beginning of the season to the 15th August is called the summer fishing; what is carried on after that date is called the autumn fishing. All the cod taken until September is salted and dried for the purpose of being exported to foreign countries; what is taken from September to the close of the fishing season is merely salted and packed in barrels, and in that state it comes to the Quebec and Montreal markets.

Haddock.—The Haddock (*Morhua Aeglefinus*) and the Hake (*Phycis Americanus*), are frequently taken in autumn off the coast of Gaspé, but these are not salted for exportation.

Herring.—Herrings (*Clupea Harrengus*), are found in immense numbers along a portion of the coast of Gaspé, especially in the spring of the year; large numbers are also to be met with during the summer season.

Mackarel.—(*Scomber Vernalis*)—in the Baie des Chaleurs, as well as off the coast of Gaspé and along the shores of the St. Lawrence, is the most plentiful during the months of August, September, and October.

Salmon.—Salmon (*salmo solar*), is found in most of the large streams along the coast.

Trout.—Most of the rivers and lakes are well supplied with trout of various kinds. The brook trout, (*salmo fontinalis*) and the salmon trout (*salmo truita*), which are the best, are chiefly met with near the shores of the Gulf and the estuaries of the rivers.

Various.—Halibut, plaice, and other fish are also taken along the coast.

Oysters.—Artificial oyster-beds were established in 1859 by P. Fortin, commander of the Government schooner *La Canadienne*, at the following places, viz: at the entrance of the Grand River Cascapedia, on the eastern side of the middle channel leading into the river; the superficial extent of the shoal, on which the oysters were deposited, is about four arpents in length by three-quarters of an arpent in width;—opposite Mr. Horace Le Boutillier's house, about four arpents from the entrance of Gaspé Basin;—and a mile further up opposite Mr. Short's house, both being on the south coast. On the first bank were deposited eighty barrels of oysters, covering a space of four arpents in length by one in breadth, and on the second bank seventy barrels were deposited.

WESTERN DIVISION.

Economic Materials.—(See Geological Report, 1857, 1858.)

Common Brick Clay.—An abundance at the mouth of the Magdalen and in several of the bays along the coast, both above and below the Magdalen, but none seen in the interior.

Copper Ore.—Traces met with near the mouth of the Great Capucin River, at about nine miles above the River Cap du Chatte.

Chronic Iron.—On the summit of Mount Albert: strewn in abundance on the surface among the fragments of Serpentine. It occurs in loose masses weighing from a few ounces to twenty pounds, almost quite free from rock and running in a direction N. 44° E. Loose

masses so abundant that in a few hours a ton of the ore might be collected by a single person; their cleanness leaves little doubt that there must be a rich deposit close to the surface, beneath the moss and soil.

Serpentine.—The Serpentine of Mount Albert, occupying an area of not less than ten square miles, would yield an inexhaustible supply of material capable of economic application. The rock appears to be unusually solid, and in several places vertical cliffs, several hundred feet in height, show nothing but bare Serpentine, while masses of eight and ten feet in diameter, fallen from them, lie at their base. The general colors as far as observed, were green or green mottled with red, and mahogany brown striped with red; occasionally a bluish tint was mingled with the other colors. The distance of the locality from the St. Lawrence, by the valley of the Great St. Anne River, is thirty-four miles. By the valley of the north tributary branch of the St. Anne and the valley of the Marsouin, the distance is twenty-four miles. In either direction roads could be easily constructed, while a great part of the way is well adapted for settlement.

Roofing Slates, Tile Stones and Flag Stones.—The best roofing slates were observed on Henley's brook. The nearest exposure of the rock yielding them is about two and a half miles above the junction of the brook with the Marsouin, or about four miles from the St. Lawrence, and it prevails for a breadth of two and a half miles up the valley of the brook. The slates might be obtained in thickness varying from an eighth to a quarter of an inch, and in slabs of eight or ten feet square with very smooth surfaces. Some parts of the rock gave thicker slabs, measuring from two to three inches, and would serve as excellent flag stones. The color of the rock is a dark bluish gray or black. Some bands of the slate are calcareous, and these for roofing purposes should be avoided.

The same rock comes out in the strike upon the Marsouin river from seven to nine miles from the St. Lawrence, and would here give a material of much the same character.

Building Stones and Flag Stones.—From the grey calcareous sandstone beds along the coast.

Lime.—In the limestone conglomerates and from the black beds occurring among the strata of the rocks described along the coast.

An abundance of building and flagstones and limestone fit for burning may be obtained four miles below Cape Magdalen.

Hydraulic Cement.—The black yellow weathering dolomites of the Mountain Portage on the Magdalen similar to those of the Grande Coupe six miles below the Grand Etang river, afford a material which gives a strong hydraulic cement, setting in a few minutes, under water to a very hard and tenacious mass of a yellowish color.

The stone differs from that at Quebec from which Captain, now Major General Baddeley, R. E., first prepared a cement now manufactured by Mr. Pierre Gauvreau; this contains no magnesia, while the Gaspé stone is a dolomite. The calcareous beds weathering to a brownish tinge among the strata in the cliff above the mouth of the Marsouin are probably of a magnesian character and possibly fit for hydraulic purposes.

Mineral Springs.—There are two mineral springs above the Grande Ste. Anne river. One of them is two and the other five miles from the river. Both are under high water mark, and they are both sulphurous, and may be saline. Another of a similar character occurs between high and low water, about two hundred paces below Petite Ste. Anne river. In the valley of the Marsourin, on the east side of the river about nine miles up, there is a spring with a small flow of water; but it is strongly sulphureous and slightly saline. Well beaten paths lead to it, shewing that it is much resorted to by the wild animals of the country.

Timber.—White and Yellow Pine, Spruce and Cedar are the only marketable description of Timber met with.

EASTERN DIVISION.

Economic Materials.

Common Brick Clay.—Clay fit for the manufacture of red bricks exists in abundance at the mouth of the Magdalen, as well as in several bays along the coast, above and below the Magdalen, but such clays are not seen in the interior.

Serpentine.—Some of the rocks of Mount Serpentine would probably answer for the purposes of ornamental architecture. The rock, however, is too much cracked and flawed to yield large sized blocks.

Limestone.—At four miles below Cape Magdalen and at some other points, but more at Cape Gaspé than elsewhere, because here the beds contain a great number of fossils, of which those more westward seem to be almost destitute.

Building and Flag Stones.—May be had in abundance along various parts of the coast, and especially at four miles below Cape Magdalen.

Hydraulic Cement.—The black yellow weathering dolomites of the mountain portage on the Magdalen, and those of the Grande Cape, about six miles below Grand Etang, furnish material giving a very strong hydraulic cement.

Sulphuret of Lead or Galina.—In the limestone cracks at the bight of Little Gaspé Cove, and at Indian Cove near the fishing stage of Messrs. Pierre and Antoine Simon, ore said to contain more antimony than lead, per analysis of Mr. de Rotterdam.

Mineral Springs, &c.—One bituminous spring on south side of the St. John River about one and a half mile above Douglastown. The liquid is Petroleum, which oozes from the mud and shingle of the beach.

Another bituminous, about two hundred yards up a small fork of Silver Brook, which is a tributary of the south west arm, falling into it about six or seven miles above Gaspé bay. One pint collected in one hour.

Sulphurous spring, two miles from the basin at one thousand yards back from the road, along the south west arm within twenty yards of the upper dividing line of Mr. B. Patterson's lot.

Another, sulphurous, on right bank of small brook about three-quarters of a mile from its junction with the north-west arm just above Point Aux Navets, four and a half miles from basin; Sulphurated Hydrogen Gas bubbles up and escapes at the sources. The waters contain in solution, soda, magnesia and lime in the form of muriates and sulphates.

QUEBEC TO GASPE BASIN,

Via Provincial Highway, along South Shore of the St. Lawrence to St. Flavie; thence by Navigation Road, when completed; thence by the present Highway along the North side of the Baie des Chaleurs.

FROM	TO	Intermediate Mileage.	Total Mileage from Quebec.	REMARKS.
Quebec	Rivière du Loup.....	114	114	128 per Grand Trunk Railway. Government Wharf about 1½ miles from Village.
Rivière du Loup	Rimouski	66	180	Government Wharf about 1 mile from Village.
Rimouski	St. Flavie	21	201	North end Matapedia Road, on St. Lawrence, at 5 miles from North end of Kempt Road.
St. Flavie	Mouth of the River Matapedia.....	93½	294½	At Junction of River Ristigouche.
Mouth of River Matapedia.....	James Sillars	5	299½	South end Matapedia Road, on Ristigouche.
James Sillars.....	South end of Kempt River.....	3	302½	On the River Ristigouche.
South end of Kempt Road	Opposite Cambeltown.....	4½	307	do
Opposite Cambeltown.....	River Nouvelle	18	325	Along Bay of Ristigouche.
River Nouvelle	Carlton	10	335	do Baie des Chaleurs.
Carlton	Great Gaspedia River.....	13½	348½	do
Great Gaspedia River.....	Great Bonaventure do	22½	371	do
Great Bonaventure do	New Carlisle	8½	379½	Chief Lien Co., of Bonaventure, along Baie des Chaleurs.
New Carlisle.....	Paspebiac	3	382½	Along Baie des Chaleurs.
Paspebiac	Nouvelle, (Township of Hope) ...	5½	388	do
Nouvelle	West Point of Port Daniel.....	9	397	do
West end of Port Daniel.....	Fabos, Village	21½	418½	do
Fabos	Grand Rive	7½	426½	do
Grand Rive	Junction of Road, 1½ miles above Percé.....	15½	442	do
Junction of Road, 1½ mile above Percé.....	Malbaie, at outlet of Barachois.....	8½	450½	do
Malbaie	Belle Anse	2½	452½	At Road intersection, 2½ miles above Point Peter, between Baie des Chaleurs and Gaspé Bay.
Belle Anne	Douglas Town	11½	464½	Along Gaspé Bay.
Douglas	Gaspé Basin	6½	470½	Fort Rainsay.
do Town..				

Via Provincial Highway, along South Shore of St. Lawrence, to Ste. Anne des Monts, thence by proposed Road to Great Fox River, thence by the New Road to Griffins Cove and Peninsula and the Ferry across Gaspé Bay.

FROM	TO	Intermediate Mileage.	Total Mileage from Quebec.	REMARKS.
Quebec.....	Rivière du Loup	114	114	128 miles from Railway, Government Wharf, about 1½ miles from Village.
Rivière du Loup	Rimouski.....	66	180	Government Wharf, about 1 mile from Village.
Rimouski	Ste. Flavie	21	201	North End Metapedia Road.
Ste. Flavie.....	Métis	5	206	North End Kempt Road.
Métis	Matane	33½	239½	West End New Road.
Matane	St. Denis	9	248½	East do do
St. Denis	Cap de Chatte.....	36	284½	West do proposed.
Cap de Chatte.....	Latourelle	13½	297½	Via proposed road.
Latourelle	Great Magdalen River	64½	362	do do
Great Magdalen River	Great Fox River	50½	412½	New Government Road.
Great Fox River	Griffin's Cove	6	418½	do do
Griffin's Cove.....	Peninsula	7	425½	Ferry across Gaspé Bay.
Peninsula	Gaspé Basin	3½	429	

N. B.—The mileage of the various places along the Provincial Highway, as above, is that which is generally charged to Travellers. The above Route is 41½ miles shorter than the Route by the Metapedia and the Baie des Chaleurs.

G. F. B.

GASPÉ BASIN, 16th December, 1862.

To the Honorable the
Commissioner of Public Works, Quebec.

SIR,—All the works on the Gaspé and St. Lawrence roads entrusted to my charge being closed for the season, I have now the honor to submit my report.

No repairs having, for the time being, been found absolutely necessary, there has been no outlay this year on the first division of the road. I would suggest, however, that two breakwaters be constructed at Watering Brook bridge; the one outside the centre pile, to prevent the blocks of ice and wood, which the spring tides and easterly gales may accumulate on the shore, from injuring the foundations; and the other inside, to throw back on to the rock on the other side of the Brook the trees and blocks of wood which on the occasion of a sudden flood, like those of the autumn of 1861, collect in heavy masses against this pile.

The cost of these two breakwaters, together with some other trifling but indispensable repairs to the bridge, may amount to about \$150; the work should be undertaken during the winter, as the timber necessary for the construction of the breakwater cannot be found on the spot, and must necessarily be brought over the ice, from the South Shore of the bay.

It is on the second division that the heavy rains of the fall of 1861 caused the greatest damage. This section, however, has been repaired in such a manner as to resist any future floods of the same nature. In the fifth mile, the greater part of the road is now protected by a wharf constructed on either side, of round timber, leaving ditches from four to five feet wide, and in some places five feet deep to facilitate the draining off of the water. To the east of the road, on the side nearest to the river, three large drains six feet wide, have been constructed at proper distances crossing the road, with discharging ditches of the same proportions.

Over the "Fork" a bridge has been built of a height sufficient to admit the passage of any substance which may in future be carried down by the river from the mountains, after the heaviest rains.

In the sixth mile, the road was completely blocked up in one spot by a slide of the mountain on the left. The obstruction has been entirely removed, the road restored to its previous condition, and a good drain made, crossing the road, to carry off the surplus water which could not find its way into the side ditch.

Finally, the whole of this division has undergone the necessary repairs, and has been restored to such a condition that the rains of last autumn, which, however, were not to be compared to those of last year, have been insufficient to cause the smallest damage.

The cost of the works on this division, including the balance due to the contractors on the operations of last year, amounts to \$1,260.00.

The works on the third division comprise the construction of a bridge over the "Mauvains Pas" brook, and another over the "Grand Ruisseau." These two bridges have been built in a substantial manner, and are now completed. The "Ruisseau à la Femelle" the nearest to Fox River, required a bridge of some size; and to avoid the necessity of its construction, I preferred to deviate from the old track, and to cross at a place some acres higher up, where the hollow formed by the brook is much less considerable, and where the construction of a bridge of only 20 feet has proved sufficient to span this watercourse. I also caused a piece of road about twenty chains long to be constructed at the extreme west; and this completes this division as far as the east bank of the Great Fox River.

The cost of these works, including repairs made on some other portions of this division, together with the balance due on last years' contracts completed this year, amounts to the sum of \$1011.00.

The sum of \$3,600.77, appropriated for this road in 1862, has been distributed as follows:

To pay the amount expended in 1861 in excess of the appropriation of the preceding years.....	\$ 714.68
Cost of works on the second division in 1862.....	1260.00
Cost of works on the third division in 1862	1011.00
Superintendence and contingent expenses.....	610.15
Making a total of	\$3595 68
And leaving a balance of.....	5.09
	<hr/> \$3600.77

in favor of the road.

Although the completion of a road connecting the important establishments of the Grande Greve and Fox River with Gaspé Basin may be considered a work of great value to this section of the county, and one also of incalculable advantage for the easy transport of mails, still the County of Gaspé in general can never derive any material benefit from the undertaking until this great postal avenue be extended as far as the Seigneurie of Ste. Anne des Monts.

The ground on this portion of the coast presents no serious obstacle to the construction of a road; and the survey made by G. F. Baillargé, Esq., has proved that this means of communication might be effected at but little expense. I beg to refer you to his report for all details connected with the construction and estimate of the works.

The whole of which is respectfully submitted.

(Signed,)

ANT. PAINCHAUD,
Superintendent,
Gaspé and St. Lawrence Road.

T. TRUDEAU, Esq.,

Secretary, Department of Public Works, Quebec.

SIR.—As all the troops expected *via* the Temiscouata Road, had arrived at Rivière-du-Loop before the 10th instant, I suspended all works on the Road, which, up to that time, had been maintained in excellent condition. The total cost of keeping up the 70 miles of road (including the two portage roads to and from Fort Ingall) between Rivière-du-Loop and the Province line, including the cost of rollers, snow-ploughs, &c., is \$6,321 95. The estimate of the probable cost of the work (*viz*: \$3,000.00), which I submitted to the Department on the 24th December last, was made when there was only about 15 inches of snow on the ground; had we then commenced to keep up the Road, it would have cost much less; but before the necessary snow-ploughs and rollers could be made, there was over three feet all through, and the single track in the middle of the road made by one-horse trains and sleighs—which are much narrower than the double sleighs used in conveying the troops—was hardly 2½ feet wide and about 2 feet high, so that horses getting off this narrow track would fall into the deep snow at the sides; we were therefore obliged to cut down this track with axes, for an aggregate distance of about 36 miles, in order to secure a uniform surface to work upon, and to make a hard and level track 12 feet wide, according to my instructions from the Department.

We had a great many snow storms and drifts during the month of January; in fact, during the whole winter, nearly every fall of snow was accompanied by high winds and drifts: we were therefore obliged to cut a passage through some banks of snow before the plough could be used, and then to shovel away the snow left by the plough on the sides of the road, so as to leave room enough for it to pass through at every ensuing snow storm. In the beginning of February the snow was five feet deep at the Grande Fourche. The very severe snow storm of the 24th—25th February,—filling up the whole width of the

road and forming huge banks of snow in many places—together with the continued soft weather in the beginning of March, made it necessary to keep a large number of men continually employed in repairing and filling up deep ruts and holes made by the heavily laden double-sleighs.

Since the 10th inst. we have commenced the plan of the road, and we will continue to work at it until it is finished.

I have the honor to be, sir,

Your most obedient servant,

(Signed) JOSEPH ROSA,
Superintendent.

APPENDIX H.

REPORT OF MR. CHARLES BAILLARGÉ, ON THE NEW JAIL AT QUEBEC.

QUEBEC, 11th February, 1868.

T. TRUDEAU, Esq.,
Secretary of Public Works.

SIR,—In compliance with the instructions contained in your communication of the 6th inst. (No. 44,269), I have the honor to report for the information of the Honorable the Commissioner :—

Plans for the proposed Jail were first advertised for in January, 1856, when 12 different sets of designs were sent in, estimated to cost respectively from £16,500 to £177,000. None of the designs however met the entire approval of the Board of Prison Inspectors; in consequence of which, I received instructions, dated 11th June, 1860, founded on an order of His Excellency the Governor General in Council, to prepare a complete set of designs “in accordance with the principle and conditions laid down by the Board of Prison Inspectors, the outlay not to exceed £16,000.”

Now, the two conditions were incompatible, as a jail for 300 inmates could not be built for less than double the amount mentioned.

On the 30th July, 1860, a communication was sent from the Board of Prison Inspectors approving of the plans as being in conformity with the principles of the board, and remarking at the same time “that a smaller building than that prepared by me would “not afford the amount of accommodation required for a jail in this city.”

The Commissioner of Public Works not wishing, however, at the time, to incur the responsibility of carrying out the whole building, ordered the contract to be prepared, with the omission, for the time, of such portions of the building as could be momentarily dispensed with, to keep within the amount appropriated, £16,000.

The present contract was awarded to Messrs. Murphy & Quigley, who had submitted the lowest acceptable tender for the work, and signed on the 31st January, 1860, since which time the contractors have managed (in spite of an unremunerating contract price, strikes among their men, and other disheartening circumstances) to bear out against all difficulties, and have so far pushed on with the work that the whole of the outer walls are now completed, together with most of the interior masonry, and the roof-trussing well advanced.

The quality of the work done so far is such as to do honor to all parties concerned.

The style of architecture adopted, though not generally considered as belonging to any particular period, possesses many of the characteristics of the Norman period, and, as such is well suited to buildings of the kind, its massive proportions and the size and quality of the stone used in the construction of the edifice being such as to render it not only most secure against the escape of prisoners, but almost impregnable from without and of easy defense from within.

The building will at least have the merit of looking like what it is intended for, which cannot be said of many buildings, though it is highly important that such should always be the case.

It may not be amiss to state, as affording some idea of the quality and intended durability of the work, that the whole of the chimney stacks are specified to be made out of solid layers of stones with the flues cut through them, no vertical joint of any kind being allowed, and the importance of this, little as it has in general been attended to, will readily be admitted, when it is considered what a never ending source of expense such exposed parts of a building are, in a climate like that of Canada.

In fact, I may make bold to say that, when completed, the Quebec jail must be pronounced the most substantial and durable edifice ever erected in Canada for a like sum of money.

The works remaining to be done to complete the building consist in the remainder of the roofing, the construction of the tower and chimney-stacks, the stoops to the several entrance-doors, and the inside carpenter's and joiner's work, plumber's work, gas-fitting, painter's and glazier's work.

There are now on the premises much of the heaviest and most expensive material for the watch-tower and large quantities of stone for concrete, &c., together with the whole of the timber-scantling for roof-trussing, the whole of the drainage and ventilating tubing, and other materials.

Mr. Whitty, than whom a more efficient hand in his line could not be found in Canada, is already far advanced in the completion of his contract for the cast and wrought-iron work of the building, the whole of the window-gratings and cell and chapel galleries being completed, and all the corridors and cell-doors on the premises, together with the whole of the iron-stays intended to counteract the thrust of the vaulted floors.

The joinery is so far advanced that the deafening floors are laid throughout, most of the sashes are glazed, primed, and put in place, the others being on the premises, and the inside doors nearly completed.

Mr. Pye has secured the contract for the whole of the plumbers' work and gas-fitting, and Mr. McKay for the painting and glazing, both of whom will no doubt carry out their works, as usual with them, in a way to secure the approbation of the Department.

Mr. Chartré will, I believe, be the successful competitor for everything in his line of business, including roofing in tin, zinc, and galvanized iron, eaves, gutters, &c., together with the whole of the heating and ventilating arrangements (stoves and stove-pipes only not included); all of which have been planned and specified in detail, and included in the contract amount: a circumstance the more desirable when compared with the immense additional cost of such works if made a separate contract of.

It may be necessary to explain what might otherwise be considered as an extra authorized by the Hon. Mr. Cauchon during his Commissionership. For reason of internal infelicity, the Board of Prison Inspectors had set forth in their "conditions" not only that all the interior walls should be built of brickwork, but that the outer walls should be faced with bricks on the inside.

I had submitted for the consideration of the Department, during the Commissionership of the Hon. Mr. Rose, that more securely to guard against the escape of prisoners, the inner brick-facing should be replaced by one of solid stone masonry, and that, provided some such stone as the Cap-rouge sandstone were made use of for the purpose, the sweating of the walls, which occurs more or less with calcareous stone, would thereby be avoided.

The brick lining at that time had not yet been commenced, but my suggestion was not sanctioned at the time. After the resignation of the Hon. Mr. Rose, I again applied to the Hon. Mr. Cauchon, his successor in the Department, for leave to make the alteration recommended by me, setting forth again that though, as far as the solidity of the building was concerned, there could be no objection to the inside brick-facing, it was nevertheless far from offering the same security against the breach-loving propensities of inmates.

The Commissioner thereupon ordered the required alteration to be carried out, and much propriety I believe, as the building will thereby be made not only much safer as to the escape of prisoners, but far more durable and strong than if carried out as at first intended.

For similar reasons, two of the party-walls which become exposed by the omission of the western and part of the central wings were also ordered to be built of stone, and the cell door jambs which I had originally intended to be of cut stone, but which had been replaced in the contract by brick jambs, to bring it within the £16,000 already mentioned, were also very judiciously ordered by the Hon. Mr. Cauchon to be carried out as at first intended.

The items above set forth were undertaken by the Contractors at the additional cost of \$13,184, and cannot be considered absolutely indispensable.

One of the portions of the building omitted in the contract, with the view already alluded to of reducing the total cost to £16,000, was the fourth story of the central portion of the edifice, the construction of which has, however, since been agreed on by an Order in Council, at a further sum of \$7,500, upon representation, made by the Architect, of the absolute necessity, both in point of appearance and accommodation, of carrying out the original design.

With regard to the southern half of the central wing, which is intended to contain the dining-room and infirmaries, together with rooms for the nurses, physicians, &c., I think it highly important that this portion of the edifice should be proceeded with immediately; as, otherwise, not only will the inmates have to dine in the corridors, a proposition not to be for a moment entertained, but one of the intended chapels will have to be made an infirmary of, thus leaving but one chapel for both denominations,—a circumstance for many reasons undesirable, and reprobated by the clergy of both denominations; and there will be no rooms for physicians, nurses, and other indispensable attendants.

This work I estimate at \$20,000. The remaining or western wing, which will contain 138 cells, and the construction of which is insisted on by the Board of Prison Inspectors as of absolute necessity, I estimated to cost \$50,000.

In consequence of some correspondence between the Department and the Royal Engineer Office, I submitted a plan for proposed loop-holes under the eaves cornice, which was approved of, and the cost of carrying out the same will entail a further expenditure of about \$2000.

Minor extras have been recommended, amounting in the aggregate to about \$5000, and which would probably be swelled to \$10,000, in the event of the whole building being carried out.

The Royal Engineers had also recommended at the same time that the central corps and central or southern wing of the building be made fire-proof, which could have been done at a cost of about \$20,000 by the mere substitution of wrought-iron joists in place of the wooden ones intended, and a filling in of brick-arches or concrete. No arrangement was come to on the subject, in consequence of the Royal Engineer Department not volunteering to bear part of the additional expense of a work recommended by them with the view of rendering the jail fire-proof throughout, and strong enough to answer the purposes of a fort in case of necessity.

As it is, the side wings which contain the prisoners have been planned by me to be thoroughly fire-proof throughout their whole extent, so that the whole of the roofing over them might be entirely consumed or reduced to ashes without in the least inconveniencing the prisoners in their cells below.

It may be well to add, in conclusion, that the present contract is for.....	\$64,000
Cost of replacing the inside brickfacing of walls, and the brick cell door-jambs, by cutstone walls.....	13,184
Cost of fourth story over main corps.....	7,500
Loop holes in cornice.....	1,000
Cement used in vaults instead of mortar.....	760
Recognized extras.....	1,292

\$87,736

Amount paid including last estimate..... 72,614

Balance to become due.....\$15,122

PROBABLE COST OF COMPLETING THE BUILDING ACCORDING TO ORIGINAL DESIGNS.

	Amount brought over.....	\$87,786
Probable cost of finishing the Southern wing.....		20,000
Do do Western wing.....		50,000
Plans and superintendence.....		11,500
Contingencies		10,000
Total probable cost of the jail when completed, exclusive of boundary-walls, &c.....		\$179,236

I have the honor to be, Sir,
Your obedient servant,
(Signed,) CHARLES BAILLARGÉ.

STATEMENT of Progress Estimates and Payments made to Messrs. Murphy & Quigley Contractors for New Gaol, Quebec, during the year 1862.

Monthly Estimate.	Gross Am't of work done per Estimate.	Drawback retained per Estimate.	Amount certified to be paid.	Previous payments.	Drawback Paid.	Amount paid on monthly estimate.	Gross Amount Paid.
1862.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
February..	43,819 75	1,093 75	42,726 00	39,745 60	.....	2,500 00	42,245 60
March	45,602 75	1,361 17	44,241 58	42,245 60	.....	1,995 98	44,241 58
April	48,220 95	1,753 94	46,467 01	44,241 58	.....	2,224 38	46,465 96
May 31 ...	.....	.....	.....	.....	1,753 00	.....	48,218 96
May	52,342 52	619 15	51,723 37	48,218 96	.....	3,504 41	51,723 37
June.....	56,354 02	1,220 87	55,133 15	51,723 37	.....	2,409 78	54,133 15
Oct. 10	60,731 07	1,877 43	58,853 64	54,133 15	.....	4,720 49	58,853 64
" 25	65,093 57	2,531 80	62,561 77	58,853 64	.....	3,708 13	62,561 77
Nov. 8 ...	68,073 32	2,978 77	65,094 55	62,561 77	.....	2,532 78	65,094 55
" 22 ...	70,447 57	3,334 89	67,112 68	65,094 55	.....	2,018 13	67,112 68
Dec. 6.....	72,737 57	3,678 39	69,059 18	67,112 68	.....	1,946 50	69,059 18
" 20.....	74,552 57	3,950 65	70,601 92	69,059 18	.....	1,542 74	70,601 92

DEPARTMENT OF PUBLIC WORKS,
Quebec, February, 1863.

J. BAINE,
Book-keeper.

APPENDIX H.

STATEMENT of the sums authorised, the proportion of work executed, and the value of work remaining for the completion of the New Jail at Quebec, the 4th October, 1862.

	Amount authorised.	Value of Work done as per August Es- timate subsequently admitted by Architect.	proportionate value yet remaining to complete.
I. CONTRACT WORK.	\$ cts.	\$ cts.	\$ cts.
To amount of Contract Work.....	64,000 00	43,993 57	29,000 43
II. EXTRA WORK.			
To amount for substituting stone lining to building in lieu of brick and stone jambs to cells, authorised and commenced 6th August, 1861; confirmed by O. C. 21st July, 1862.....	13,184 00	10,567 00	2,617 00
To amount for arches in brickwork laid in cement; authorised 20th May, 1862; confirmed by O. C., 21st July, 1862.....	760 00	} estima- ted by Arch't as done. } 253 33	506 67
To amount for loopholes in cornice and roof, commenced the 3rd March, 1862; confirmed by O. C. 21st July, 1862.....	1,000 00		1,000 00
To amount of extra work recognised by Architect after making deductions for works omitted.....	1,292 44	} estima- ted by Arch't as done. } 860 00	432 44
To amount authorised for fourth story, in addition to con- tract sum by O. C., 5th September, 1862.....	7,500 00		4,500 00
	87,736 44	58,673 90	29,062 54
Amount paid Contractors to date.....		54,133 15	
		4,540 75	
Less 15 per cent drawback.....		680 75	
Balance		3,860 00	
Total amount of work done.....	58,673 90		
15 per cent drawback to be retained as per Contract..	8,800 90		
	49,873 00		
Amount paid Contractors to date.....		54,133 15	
Amount due as per Contract.....		49,873 00	
Amount over paid, if the whole of the drawback were retained according to Contract.....		4,260 15	

OFFICE OF PUBLIC WORKS, }
4th October, 1862.

(Signed,) JAMES H. ROWAN,

APPENDIX I.

REPORTS OF THE ASSOCIATE ENGINEER AND ARCHITECT OF THE PIER AT RIMOUSKI.

OFFICE OF PUBLIC WORKS,
QUEBEC, August 8th, 1863.

T. TRUDEAU, ESQ., Secretary.

SIR,—Conformably with instructions from the Commissioner of Public Works, I visited the landing-pier at Rimouski, below Quebec, on the 2nd of the present month, the outer end of which pier, for a length of three hundred feet, I found had subsided from the level on the north-eastern face, at the most depressed point, distant about one hundred and twenty feet from the ends; while at the extremity or pier-head, the inclination from the level was only about fourteen inches towards the same direction, north-easterly.

I have been informed that this subsidence of the pier has been not so much a gradual process, occurring from the period of its first construction, as the sudden and partial effect of violent storms, during extraordinary tides, of recent date. The heaviest seas, striking the pier in this direction, and acting on and displacing the softer material of which the bottom of the river is composed at this particular spot, may, I think, be taken as the true cause for the heeling over of the pier to an extent that is dangerous to its present use and threatens its ultimate destruction.

Mr. Gauvreau has reported on two modes of remedying the damage the pier has sustained; either by taking off the timbers and stonefilling down to low water on the exposed face, and rebuilding up the same to the required level; or, otherwise, levelling up the sunken portion of the pier to a horizontal line. The first proposition, although the more costly, and extending over two years operations, he the most confidently recommends, covering as it does an outlay of \$6785.

Upon giving both these projects some consideration, it appeared manifest to my mind that, in adopting either method, little would be accomplished towards restoring the stability of the pier or enabling it to resist the disastrous effects of future storms, such as prevail in this locality. By merely taking down and rebuilding the superstructure of the pier on the same inclined base, nothing would be gained, except that the planked platform on top would be contracted to a less width, from restoring the slope or batter to the north-east side, where it has become out of the perpendicular. The result, however, would be, after great cost, to present a less solid mass to resist the force of the sea, and could not be depended on as an effectual and remedial measure.

On the accompanying plan, which I have prepared to show the extent of the disturbance which the pier has sustained from the causes set forth, I have likewise laid down in red tint, an extra pier of support, or ramp, towards the sunken side, which, while it will afford additional facilities for loading and unloading, wanting on this exposed side of the present pier, will also act as a "breakwater," and prevent the further canting of the pier in this direction, by giving it a broader base of support.

The expenditure on this proposed improvement, although slightly exceeding Mr. Gauvreau's estimate, might, as suggested, by him, be extended with advantage, over two years operations, namely: for the first year, sinking cribs, solidly filled with stone, 15 to 16 feet in width, up to the level of low water line,—a precaution which would secure the present pier against further upsetting, as may be anticipated; the superstructure to be completed the year following, after the cribs have taken a solid bearing on the bed of clay and sand. The outlay for the present year would be about two thousand eight hundred and one dollars (\$2801), and that for the second year four thousand and forty-five dollars (\$4045), a total of \$6846.

The remainder of the landing pier at Rimouski, for a distance extending to the shore, of several hundred feet, I found in excellent condition and repair.

I have the honor to be,

Sir,

Your obedient servant,
(Signed,)F. P. RUDEEN,
A. E. P. W.

DEPARTMENT OF PUBLIC WORKS,
 QUEBEC, 30th June, 1862.

T. TRUDEAU, Esquire, Secretary.

SIR,—I have the honor to submit the following remarks, based on the report of Mr. L. P. Gauvreau, on his inspection of the repairs to be made to the pier at Rimouski.

This pier is entirely unserviceable for vehicles carting goods, and at certain times dangerous even for foot passengers; for independently of a cavity which the tide has made, by carrying off the filling from a space of 900 feet long and five or six feet wide, the pier has sunk five or six feet on the north-east side of its outer end along a surface of 250 feet.

This sinking was caused by the nature of the site, which is composed of shifting sand on the north-east, and of rock on the south-east.

The face-timber on the north east side has sunk many feet into the sand; whereas on the other side, the foundation being solid, it has retained its original level.

In this manner, in a width of only thirty feet, there is a difference of level of five or six feet. I think it, therefore, my duty, in view of the interests of the inhabitants of the place (who are unable to make use of the pier) and also of the Government, to recommend that the pier be repaired as soon as possible, in order to prevent further damage.

There are two methods of repairing it: the first—which I consider the most economical, being the surest—is to demolish the damaged portion down to water level, and to reconstruct it this summer to within two or three feet of its intended height; the remainder could be added the following spring, and this would allow it time to take a solid level during the winter.

The second method is to level the sunken portion, by adding the face-timber and stone necessary. I would not, however, recommend this second method, although it would be effectual if the pier had a solid foundation; but if it continues to sink, the portion of the face-timber under water will break under the load of stone, which, finding a vent, will not only cause great expense in repairs, but will also prove a serious obstruction to vessels, which will be afraid to approach for fear of striking on the stone fallen from the pier; or else—whereas this pier, at the period of its construction, had a batter of three feet from top to bottom, which it has entirely lost by the sinking alluded to, (for the north-east side is now perpendicular to the water level,)—it will, without doubt, incline outwards, and the pressure on the face-timber will upset it. This will be the consequence if the pier remains in its present condition. In my opinion, the surest means would be to reconstruct the damaged portion.

It is true the cost may appear high, but it must be remembered that piers of this kind require certain repairs to be made every year, failing which, the damage increases to a considerable extent; so that if the damage in this case is extensive, it is partly because no repairs have ever been made, whereas other piers below have been repaired once, and even twice.

I have the honor to submit herewith estimates of the probable cost of the work to be done, adopting either of these methods. (2nd not printed.)

As soon as it is decided that the work shall be proceeded with, I will furnish a plan and specification showing how the repairs should be made, according to the method selected.

I have the honor to be,

Sir,

Your obedient servant,
 (Signed,)

P. GAUVREAU,
 Architect.

No. 1.

Estimate of the probable cost of necessary repairs to the Pier at Rimouski, to be made during the summer of 1862.

Reconstructing the damaged portions up to low water level.

5,666 Cubic feet of Pine for Face-Timber,.....	\$ 15	\$ 849 90
12,500 " Timber for Ties.....	12	1500 00
7,500 " Platform.....	7	525 00
250 Toise of stone for filling	4 00	1000 00
19,575 lbs of Iron.....	5	978 75
		<hr/>
		\$4,853 65

P. GAUVREAU.

(Signed,)

QUEBEC, 30th June, 1862.

No. 2.

Estimate of probable cost of works to be performed at Rimouski Pier, during the summer of 1863, over and above Estimate No. 1.

44 Squares of Planking.....	\$3 00	\$ 132 00
1800 Feet of Fenders.....	25	450 00
6000 lbs of Iron for Fenders.....	5	300 00
Iron straps for lining at the end of the Pier.....		50 00
200 Squares of Planking.....	5 00	1000 00
		<hr/>
		\$1,932 00

P. GAUVREAU.

(Signed,)

QUEBEC, 30th June, 1863.

APPENDIX J.

LAKE ST. PETER—REPORTS ON WORKS.

HARBOUR COMMISSIONERS' OFFICE,
Montreal, 23rd January, 1863.

SIR,—I have now the honor, by direction of the Harbour Commissioners of Montreal, to enclose the reports and financial statements, as requested by you, in connection with the operation of deepening Lake St. Peter.

These statements have been prepared by the superintendent of the works, and the Commissioners authorize me to state most respectfully that, although they were not furnished monthly, in accordance with the copy of the Order in Council which you forwarded for their information on 26th July last, they thought that from the late period when the works were recommenced, returns made at the close of the season might meet with the approval of the Hon. the Commissioner of Public Works.

With this assurance of their desire to afford you every information in their power, the Harbour Commissioners trust you will find the reports and accounts now furnished satisfactory and explicit.

The following are the documents enclosed :

1. C. L. Armstrong's report on lake works for the year 1861.
2. C. L. Armstrong's report on lake works for the year 1862.

J. C. L. Armstrong's returns of expense incurred in lake operations during the year 1862, for the respective months of August, September, October, November, and December, with a recapitulation showing the total amount of same in sum of \$17,949 89cts.

4 Statement showing the amount expended on the lake works in 1861, as already furnished to the Provincial Government in our annual returns

With reference to the latter named statement for 1861, the amount of \$27,376 34 cts. represents the net cost of dredging the channel of navigation between Montreal and Quebec. Deducting, however, the expense of working that portion of the channel commencing opposite to Montreal, and the expenses incurred while the dredging vessels were employed in the harbour proper, together with the balance at credit of the lake operations account for 1860, the total cost of dredging in the lake for 1861, is \$16,269 92cts.

By these returns, you will perceive the Commissioners do not include the immense cost for repairing the dredges and steamers damaged by the freshet last April, which amounts to no less than \$24,875.60cts, as well as the cost of preparing the vessels for work in the spring, previous to that accident, in sum of \$12,080.50cts. These two amounts are now standing at debit of the Harbour of Montreal, in the books of the Trust.

I have the honor to be,

Sir,

Your obedient servant,

(Signed,)

ALEX. CLERK,
Secretary

T. TRUDRAU, Esq., Secretary,
Department of Public Works, Quebec.

SOREL, 13th January, 1863.

ALEX. CLERK, Esq., Secretary,
Harbour Commissioners, Montreal.

SIR,—For the information of the Harbour Commissioners, I beg to lay before you the following statement of our dredging operations for the year now ended.

Owing to the very serious damages to the dredges, tenders, barges, &c., caused by the freshet of April last, and the time necessarily spent in making the extensive repairs required, which cost no less than \$24,875.60cts., we were unable to commence operations in the lake till late in the season. The steamers "St. Lawrence" and "St. Peter," were constantly employed for upwards of two months in lifting and searching for missing vessels, anchors, and chains. Dredge No. 2 was sunk in 20 feet of water, on the west side of the Richelieu, opposite the barracks, and, owing to the steepness of the bank, afterwards settled into 37 feet of water. Dredge No. 3 was sunk about a mile below in the St. Lawrence.

The barge "McCarthy" was also sunk in 37 feet of water, about 500 feet further down the river than dredge No. 2, and the barge "Whitney" was sunk in the St. Lawrence in 46 feet of water. Having discovered the whereabouts of the last named barge shortly after the accident, I caused a buoy to be placed over her, otherwise we should have been unable to find her out, as she sank to the bottom in forty-six feet of water, as before stated, and, but for the anchors and chains on board, belonging to the different dredges, it would not have been worth while to raise her, as we found an immense quantity of sand had settled in her, she being then an open barge; but when repairing her since, I have had her made into a deck barge.

The steamer "St. Peter" was carried out about three miles below the barracks, but although nearly full of water, she fortunately escaped, as she was kept from sinking by the wrecks of several *bateaux* underneath, the only damage sustained by her being to the flange of her larboard wheel; she was nevertheless put to work immediately with the one engine. Some of the scows were carried away through the Islands, as far as the entrance to Lake St. Peter, and, all being more or less damaged, had to be hauled up here for repairs.

The raising of the dredges and barges was a work of great difficulty, and particularly of dredge No. 2, owing to the great quantity of sand in her, and lying as she did in a hole, which caused us to expend a great deal of time in getting the lifting-chains underneath.

Once lifted, it was found necessary to have her towed down to the St. Lawrence, as the shores of the Richelieu were too steep to ground her, so as to enable us to take a second lift. We grounded her in twenty-eight feet of water, and by numerous lifts of from eighteen inches to two feet each, raised her up to eight feet water, which necessarily required a large outfit in chains, ropes, planks, &c., and the constant employment of the steamers "St. Lawrence" and "St. Peter," and four scows. In raising these dredges, and the barge "Whitney," we worked at great disadvantage, and lost considerable time for the want of a proper diving dress.

Upon receiving instructions from the board, dredge No. 3 was taken to the lake on the 2nd August, and commenced to follow up the channel from below the winter buoy, opposite Machiche, where we had left off cutting the 20 feet channel, and on the 8th September, dredge No. 2 anchored further up the stream, leaving one chain length between the two dredges.

These two dredges worked together, bringing up the 20 feet channel, till the 26th November, without any accident to the machinery, and losing no time, except from stress of weather and unavoidable detention while vessels were passing.

The season having been unprecedentedly stormy, with high winds from the south and south-west, caused a considerable loss of time. The great number of sea-going vessels passing up and down the river, to which we gave a free and uninterrupted passage, by drawing the dredges close to the north shore, also caused considerable time to be lost; each vessel on an average detaining us about half an hour or two scow loads, equal to about 118 cubic yards for each dredge.

My anxiety to finish the channel in the lake, induced me to continue working the dredges there till the close of the season, instead of removing them about the 1st of November, as heretofore done to Lavaltrie, where the fall weather is less severely felt.

The number of effective days, working by the two dredges jointly, is 137, removing 3137 scow loads full, which at 70 cubic yards each load, amounts to 219,590 cubic yards; and this has been done in the most unfavourable season, particularly as the second dredge began working only on the 8th of September, so that a great part was done not only in the most stormy season of the year, but also when the days are short. I have likewise to remark that the dredges having been wholly employed in *finishing up* and *trimming* the channel, they could not necessarily excavate as many yards per day as usual; and I have to add that I found the centre of the channel deeper than the sides, which I can only attribute to the bottom having been disturbed by the deeply laden vessels as they passed along, and thereby in some measure deepening the excavation, part of the disturbed material having undoubtedly been carried away by the current, but some part also settling at the sides. Only for this fact, the sides would have been found of equal depth with the centre, the frame being a true index of the depth of the channel from bank to bank.

The dredges were moored as described by Mr. Keefer, in his report for 1855 (page 15).—"The dredge is moored on chains leading from the bow and stern, in the direction of the channel, and also by four chains at right angles to the channel, one out from each quarter of the vessel. In this position, she may be compared to a *turtle*, chained by the head, tail, and the four legs, and floating over the channel to be cut.

"Instead of cutting a continuous trench by hauling ahead on the bow chain, the buckets take a feed of two or three feet, after which this chain remains taut, and the dredge is breasted over by means of the side-chains, broadside on, from one side of the channel to the other, the buckets crossing the whole width of a channel of 150 feet (now 300 feet), and leaving the bottom true and even. When the opposite side of the channel is reached, she is heaved forward for another feed, and recrosses the channel in the same manner, cutting from left to right and from right to left alternately. Her bucket-frame, sweeping across the channel, acts as a huge plan with revolving cutters. Thus, from the very nature of the system, there is a guarantee that when she has once gone over the ground, no obstruction above the level to which the buckets were lowered can have been left behind. The four winches are worked by the engine. The adaptation of the old

Board of Works' dredges to this mode of working is due to Captain Bell, and to this arrangement, chiefly, I attribute the great advance made in dredging. I am not aware of any similarly efficient gearing in use elsewhere." Any want of uniformity existing in the face of the banks must be attributed to the working of the breast-chains on each side, and caused by the moving of the dredges across the channel. But the channel itself, when finished, could not be made more suitable for navigation ; in fact, no person engaged in navigation has ever found fault with it.

The material in the third cut is much softer than when the operations began, and consequently the buckets do not bring up the same quantity of stuff that they did in the beginning, when it would come up in large lumps, above the lips of the buckets ; whereas now the buckets are filled with soft stuff and water, merely filled. Likewise, the boilers of the dredges are now short of flues, which causes a deficiency of steam, although attended with a greater consumption of fuel. For instance, dredges Nos. 2 and 3, when new, had 19 flues each, and lifted 28 buckets, whereas No. 2 has now only 12 flues, and lifts, as necessary, 34 buckets, and No. 3 has 11 flues, and lifts 35 buckets. A consequence of this deficiency of steam is, that less excavation is done, and the tender is frequently obliged to wait for the filling of the scows.

The extra expense incurred in dredging in deeper water, I noticed in one of my former reports, and the same thing has been observed by the late superintendent, who in his report for 1855 (page 2), states as follows : " At the same time we have had a large proportion of lost time in comparison to the last two seasons. This is owing to the long continuance of heavy winds during summer, and the dredges being constantly working in deep water, the sea has more effect upon their machinery than when they are working in shallow water. When on this subject, I should remark as the channel is increased in depth our loss of time will increase in proportion."

The total expenditure in dredging operations since we began on the 2nd of August, amounts to the sum of \$17,948.89cts., shewing the actual cost of dredging, exclusive of spring repairs, to be 8½ cents per cubic yard, in trimming up and finishing the channel in the not most favorable season of the year for doing the work. The spring repairs to the fleet, previous to the freshet, amounted to \$12,080.50cts.

The repairs required to prepare the fleet for next spring's work, admit of no delay.

With regard to estimating these, I beg to remark that no estimate for repairs of old vessels can be much depended upon, because frequently when the repairs more urgently required are made, others are found to be equally necessary. For instance, the steamer "St. Lawrence" last year ; and another example is dredge No. 2, which we have just commenced to repair by taking out a piece of her keelson, and doing so, we found other pieces equally bad, and one leg of the frame defective also, though the outside is perfectly sound. After my experience in the making of the dredges, I have no improvement to suggest in the machinery, other than I have spoken of, and I have seen none that do work as efficiently.

The officers and men in the service have always exerted themselves to the utmost, and I consider it due to them to say that, after an experience of some thirty-six years as master of a vessel, I do not believe that any company is better served than the Harbour Commissioners.

I remain, Sir,
 Your most obedient servant,
 (Signed,) C. L. ARMSTRONG,
 Superintendent.

RECAPITULATION

Showing the total expenditure incurred by the Harbour Commissioners of Montreal, on account of the operations for improving the channel of navigation in Lake St. Peter, from the 2nd August, to the 31st December, 1861 :—

To Salaries and wages.....	\$5694.64
“ Wm. Kelly, groceries, cordage, &c., &c.,.....	1036.60
“ Store ships and incidentals, &c.,.....	2920.78
“ D. & J. McCarthy & Co., lumber, &c.,.....	19.32
“ T. Chalmers, vegetables, &c.,.....	143.58
“ D. Sexton, butcher.....	665.12
“ J. Strachan, baker.....	191.00
“ Coal account.....	5649.00
“ Insurance	1504.08
“ J. Portelance, blacksmith.....	67.60
“ Wm. Woolley, baker.....	1.13
“ A. McGibbon, groceries.....	13.55
“ Richelieu Co., freight.....	35.53
“ E. & J. G. Patneaud, castings.....	6.96
	<hr/>
	\$17,948.89

(Signed,)

C. L. ARMSTRONG,
Superintendent

SOREL, 31st January, 1862.

ALEX. CLERK, Esq., Secretary,
Harbour Commissioners, Montreal.

SIR,—I beg leave to lay before you for the information of the Harbour Commissioners, a statement of the improvements effected in the channel of Lake St. Peter during the past season.

On the 14th day of September last, dredge No. 2 was sent to the Lake to begin dredging from the White Buoy up, and remained there till the 23rd of November, when she was brought up to the Island and dismantled, while part of her crew was engaged in hauling up and repairing four of the scows, by giving them new sterns, and repairing bottoms to light water-mark, and that in a substantial way.

Noticing that the large ships drawing as much water as could be found in the unfinished part of the channel at the slight curve at the little buoy, did not obey their helm as well as in the other part of the channel, I thought it best to leave off about a mile below, and come up to the white buoy. In the spring, we will return to the place we left in the fall of 1860, to bring up the 20 feet channel, while the water will be high enough to allow vessels of 23 feet to go up.

We dredged last year, though frequently interrupted by heavy gales, 970 scow loads, equal to 67,900 yards. I propose to commence working between Lanoraie and Lavaltrie, as we have heretofore done, in early spring, until the easterly gales are over.

The new steamer St. Peter, I may say, has been found to answer every expectation.

The St. Lawrence has been hauled up, and I regret to say she is in a worse state than could be expected. The engine, kelsons, and frame are rotten, and must be taken out. The main kelson is broken ; that will be repaired, and will be put in good running order.

The engine of the Oregon was taken out this fall, and is on the wharf here.

The hull has been hauled up in Messrs. M'Carthy's yard, with the boiler in her.

All the dredges require to be overhauled in their machinery, and particularly dredges Nos. 2 and 3, and all require thorough caulking, and a good deal of carpenter work in their wells.

The Harbour scows require thorough repair to low water mark, new decks, sides, &c.
All the buoys have been hauled up on the Island to-day.

The wharf at the station has been put in good repair, with an ice-breaker on the west end.

I remain, Sir,
Your obedient servant,
(Signed,) CHAS. L. ARMSTRONG.
Superintendent.

STATEMENT showing the amount expended by the Harbour Commissioners of Montreal, in carrying on the operations for improving the ship channel between Montreal and Quebec, for the year ended 31st December, 1861 :—

Paid salaries of superintendent, officers and engineers.....	\$6027.00	
Wages of crews of dredging fleet, and incidental expenses paid by the superintendent..	\$14,193.06	\$20,220.06
Blacksmith, and engine makers work.....		481.73
Shipwrights repairs and outfit of vessels.....		1,399.43
General supply of groceries, ship-chandlery, paints, oils, cordage, tools, iron, hardware, pork, flour, butter, and fittings.....		3407.48
Insurance against fire on the steamers and dredges.....		2,444.00
Bread.....		265.15
Butchers meat.....		642.28
Stationery and books.....		50.58
Flags for the vessels.....		113.00
Hire of steamer "John Redpath"		1,400.00
548½ chaldrons coal consumed by steamer and dredges	\$2,248.85	
Firewood	\$21.60	2,270.45
Carrying supplies and freights.....		140.95
Amount of expense incurred in widening and deepening that portion of the channel of navigation, opposite to the Harbour of Montreal.....		11,107.02
		<u>\$43,942.13</u>
Less proportion of outfit and expenses charged to the dredging operations in the Harbour of Montreal, for the period during which the vessels were working in 1861, in this port.....		\$10,092.89
Balance at credit of lake and river dredging account for 1860, per statement herewith, "E".....		6,472.30
		<u>16,565.19</u>
Total expense for 1861.....		<u>\$27,376.94</u>

(Signed,)

ALEX. CLERK,
Secretary.

E. & O. E.,
Harbour Office, Montreal, 31st January, 1862.

E

Final statement of the Lake and River operations account for the year 1860 :—

to the amount received 22nd October, 1860, from the Provincial Government, being the first instalment of the sum of £40,000, as agreed by them to be paid to the Harbour Commissioners, on account of bringing the ship channel improvements to completion.....	\$32,000.00	
to this amount received, being second instalment of the above sum of £40,000 on 27th April, 1861.....	<u>32,000.00</u>	\$64,000.00
Less gross amount of expenditure during the year 1860, according to statement rendered to the Provincial Government on 14th March, 1861		<u>57,527.70</u>
Balance carried to the credit of Lake and River improvements for the year 1861, per statement herewith		<u>\$6,472.30</u>

E. & O. E.,

Harbour Office, Montreal, 31st January, 1862.

(Signed,)

ALEXB. CLERK,
Secretary.

APPENDIX K.

STATEMENT shewing the result of the proceedings before the Official Arbitrators in 1862.

Claims awarded on	Nature of Claim.	When referred.	Amount claimed. \$ cts.	Amount awarded. \$ cts.	With or without costs.	Amount of costs.	Date of award.
*Hooker, Jacques & Co....	Detention of Steamers in Canals above Montreal	1861. Feby. 19...	15715 84	.....	without	unsettled.	March 28..
Edward Sterlin	Loss of time, &c., Jail and Court House, Magdalen Island	Novr. 28...	2224 70	1360 00	with	do	9..
Louis Touchette	Loss of Two s—Piers, St. Anne de la Perade.	do 8..	302 00	.....	without	do	15...
Birchclair & Skelsey.....	Damages Contract for 13 Jails and Court Houses, L. U	Oct. 19...	84951 05	.....	do	do	June 10...
Edward Quinn	Loss of Timber—Works on River St. Maurice.	1862. April 30..	34215 87	.....	do	do	Novr. 4..
S. X. Gimon.....	Damages—Contract for Jail and Court House, Malbato	Aug. 28..	62204 36	4632 19	with	do	do 4...
CLAIMS STILL PENDING.							
Benjamin Prewster	Land taken for a slide on the Ottawa.....	1861. Janv. 21..	not specified.	postponed	until next	meeting.	
Denis Mug ure.....	Supplies furnished to Government Steamers.	Oct. 19..	130 30	do	do	do	
J. G. Gagnon	Contract for Saguenay Works	do 19..	not specified.	do	do	do	
CASES STRUCK OFF THE ROLL.							
G. & W. Tate	Offset against Rent—Dry Docks. Montreal ..	1861. Novr. 13..	failed to appear.	.....	.....	.....
A. P. Macdonald & Co	Works at Chat's Canal.....	1862. April 24..	general reference	.....	cancelled by order in	Council.	
Inhabitants of Beauharnois, St. Cecile & other parishes	Damages caused by Beauharnois Dam.....	May 12..	do	do	do	do	
CASE UNDER APPEAL.							
*Hooker, Jacques & Co....	Award appealed from by claimants—Case has been heard in the Superior Court, but judgment has not been rendered .....	.....	.....	.....	.....	.....

Quebec, 30th December, 1862.

(Signed,)

G. TUDOR PENBERTON,

Notary Public for the Province of Quebec.

EXPENDITURE on account of Arbitrations, of the year 1862.

to.	NAMES	Amounts.	Totals.
62.	Office:—	\$ cts.	\$ cts.
ber.....	T. Kirkpatrick, salary.....	1000 00	
.....	J. A. Moreau, do	1000 00	
.....	P. Vankoughnet, do	1000 00	
.....	G. T. Pemberton, as Secretary.....	1000 00	
.....	T. Kirkpatrick, travelling expenses.....	422 72	
.....	J. A. Moreau, do	434 01	
.....	P. Vankoughnet do	433 60	
.....	G. T. Pemberton, do	41 62	
.....	Messenger	64 00	
ry.....	Desbarats & Derbishire, stationery.....	18 50	
.....	Aug. Coté, stationery and printing.....	155 70	
ber.....	J. N. Duquet, do do	34 00	
ber ...	— Brousseau, printing	10 40	
.....	Montreal Telegraph Company.....	15 36	
ry	Auld & Rouselle, boxes.....	16 61	
ber.....	Cab hire, firewood, stationery, &c	63 44	
			6713 96
	Awards:—		
ry	Edward Slevin.....	1366 66	
ber.....	S. X. Cimon.....	4632 19	
			6098 85
	Costs in re:—		
ary.....	Edward Slevin, unsettled, paid on account.....	39 60	
.....	Louis Touchette, do do	170 25	
.....	Sinclair & Skelsey, do do	437 15	
ber.....	Edward Quinn do do	46 00	
.....	S. X. Cimon do do	941 50	
			1634 50
			13,347 31

APPENDIX L.

PROVINCE OF CANADA, for Provincial Steamers in account current with Department of Public Works for the year 1862.

Dr.	\$ cts.	Cr.	\$ cts.
To amount paid in 1862 for advertising sale of Steamers.....	21 72	By balance available, 1st January, 1862	19933 46
" amount expended in 1862 for outfit, fuel, running expenses, and repairs..	71922 76	" appropriation for 1862. 25 Victoria ch. 3.....	30000 00
" balance available for current expenditures of 1863.....	21970 96	" revenue for 1862 paid in at Receiver General's	37756 98
		" Amount placed to the credit of Receiver General, for services of Steamer proceeding to the assistance of "S. S. North Briton	1225 00
		" outstanding debts, stock of coals available for 1863 about.....	5000 00
Total.....	93,915 44	Total	93,915 44
		By balance available for 1863	\$21,970 96

EXTRACT OF TOWAGE ACCOUNT FOR 1868.

Date.	Name of Vessel.	Consignee.	From.	To	In distress.	Value.	Amount Received.	REMARKS.
May 3.....	Ship "Ben Lomond"	Jos. White.....	Father Point...	Quebec	1	20000 00	\$ cts. 521 88	
" 17.....	Bark "Ovan"	Julien & Frères.....	Les Pelerins....	do	1	16000 00	658 95	
June 3.....	"Pride of Canada"	John Shaw & Co.....	Caribous.....	do	1	.....	881 00	
" 20.....	"Czar"	E. Burstall.....	Gut Canso.....	do	1	28800 00	1936 14	
" 23.....	Bark "Wolfe's Cove"	Gilmour & Co.....	Metis.....	do	1	10000 00	608 00	
July 11.....	"Pride of Canada"	John Shaw do	Brandy Pots...	do	1	34000 00	808 75	
Aug. 15.....	"John Moore"	John Moore.....	Green Island...	do	1	28000 00	503 75	
" 17.....	"Sarah"	Dickey & St. Pierre.....	Metis	do	1	12000 00	600 00	
Sept. 27.....	"Patrician"	Burstall & Co.....	.....	do	1	20000 00	268 75	
Octr. 31.....	Schr. "Sirius"	John Henderson.....	.....	do	1	.....	830 72	
Novr. 26.....	"Clydesdale"	Roas & Co.....	Quebec	Bic .....	.....	80000 00	500 00	Without the steamers, these 4 vessels would not have pro- ceeded, on account of the ice.
" 29.....	Bark "Avondhue"	Gillespie & Crawford.....	do	Brandy Pots.	.....	26608 00	437 50	
" 30.....	Ship "Edward Oliver"	Falkenberg & McBlain.....	do	Bic .....	.....	76000 00	512 00	
Dec. 1.....	"Echo"	M. J. Wilson.....	.....	Brandy Pots..	.....	50096 00	481 25	
				Approximate value.....		401,504 00	9448 69	Amount received for towage of the above named vessels.

(Signed,)

J. B. MARTEL. B. K.

Quebec, 12th February, 1868.



EXPENDITURE on account of Arbitrations, of the year 1862.

Date.	NAMES	Amounts.	Totals.
1862.	Office :—	\$ cts.	\$ cts.
December	T. Kirkpatrick, salary	1000 00	
do	J. A. Moreau, do	1000 00	
do	P. Vankoughnet, do	1000 00	
do	G. T. Pemberton, as Secretary	1000 00	
do	T. Kirkpatrick, travelling expenses	422 72	
do	J. A. Moreau, do	434 01	
do	P. Vankoughnet do	433 00	
do	G. T. Pemberton, do	41 62	
do	Messenger	68 00	
February	Desbarats & Derbishire, stationery	18 50	
October	Aug. Coté, stationery and printing	155 70	
November	J. N. Duquet, do do	34 00	
September ...	— Brousseau, printing	10 40	
do ...	Montreal Telegraph Company	15 36	
January	Auld & Rouselle, boxes	16 61	
December	Cab hire, firewood, stationery, &c	63 44	
			5713 96
	Awards :—		
January	Edward Slevin	1366 66	
December	S. X. Cimon,	4632 19	
			6008 85
	Costs in re :—		
February	Edward Slevin, unsettled, paid on account	39 60	
do	Louis Touchette, do do	170 25	
May	Sinclair & Skelsey, do do	437 15	
November	Edward Quinn do do	46 00	
do	S. X. Cimon do do	941 50	
			1634 50
			13,347 31

GENERAL REPORT

OF THE

Canada Minister
Commissioner of Public Works

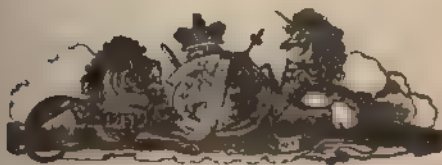
FOR THE

YEAR ENDING 31st DECEMBER, 1868.

FURNISHED

In compliance with the provisions of the 28th chapter of the Consolidated Statute
of Canada, section 24.

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Printed by order of the Legislative Assembly.  
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QUEBEC:

THE CONTRACTORS, BY HUNTER, ROSE & CO. ST. URSULA ST.
1864.

*Canada
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R E P O R T
OF THE
Commissioner of Public Works,
FOR THE YEAR 1863.

To His Excellency the Right Honorable CHARLES STANLEY,
Viscount MONCK, Governor General of British North
America, &c., &c., &c.

MAY IT PLEASE YOUR EXCELLENCY :—

The undersigned Commissioner of Public Works has the honor to submit, as required by law, the following general report upon the several public works and buildings under the charge of his department, for the year ending 31st December, 1863.

He thinks proper to remark that although the duty of furnishing an account of the transactions of his department for the whole of the past year devolves on him by virtue of his office, he can only speak of them from personal knowledge since the 23rd July last, when, at Your Excellency's command, he assumed the responsibility of directing its affairs; the report of its proceedings previous to that date being derived from the records of his office

In consequence of the necessity which has existed for restricting expenditure in every branch of the service as much as possible, consistent with its efficient administration and actual requirements, the gross outlay upon all the Public Works, for construction, and for repairs and management, during the past year, amounts to the sum of only \$821,073.31, which is less than it has been any year since 1851; the average of the annual expenditure during this period of thirteen years having been \$1,216,362.

The details of this expenditure, arranged under their proper heads in the usual tabular forms, are given in the Statements Nos. 1, 2, 3, 4, 5, 6 and 7, appended to this report.

No. 1. Statement of the several works under the charge of this department, which are in use and yield revenue; shewing, under different heads, the expenditure on construction, and the amount paid for land damages during the year 1863; the total cost of con-

struction under this department to the 1st January, 1864; and the cost of repairs and management during the past year.

No. 2. Statement of the Public Works under the charge of this department, incomplete and, as yet, unproductive, but on which tolls are to be levied as soon as they are available; shewing the expenditure thereon in 1863, on construction and on repairs and management, and the total expenditure up to the 1st January, 1864.

No. 3. Statement of the several Public Works and buildings in charge of this department or in course of construction under it, yielding no direct revenue, but in use for the public service, and authorized by legislative appropriations; shewing the amount expended thereon during the year 1863, and the total outlay upon them up to the 1st January, 1864; also the amount expended for repairs and maintenance during the past year.

No. 4. Statement of expenditure on certain miscellaneous services under this department, during the year 1863.

No. 5. Statement of the expenditure incurred under this department for the repairs and management of the Ordnance Canals, for the year 1863.

No. 6. A detailed statement of the expenditure incurred in the repairs and maintenance of the Provincial Light Houses, under the charge of this department, for the year 1863.

No. 7. Abstract statement, shewing the total amount expended under the Department of Public Works, during the year 1863, as detailed in the foregoing statements numbered 1, 2, 3, 4, 5, and 6.

The undersigned has given his careful attention to the internal organization and working of his department, and is gratified to find that many improvements, tending to its efficiency, have of late years been introduced. Considerable progress has also been made in collecting the title deeds of the public lands in the charge of this department, and in arranging and classifying the archives of this office. He has also had under consideration, and intends to put in practice without delay, a further classification of the different officers of the department into special categories, better adapted to the services these officers are called on to perform, and the adoption of certain additions to the present system of keeping the books of his department, for the purpose of rendering it more complete, and by which the Commissioner will be enabled to guard against unnecessary and unauthorized expenditure.

INLAND NAVIGATION.

The success of the St. Lawrence, as a competing route for Western trade, is a matter of such vital importance to the interests of this Province, that the subject has already been frequently brought before Your Excellency, in the annual reports of this department. It has also been ably discussed by persons whose experience and commercial standing entitle their opinions to the greatest consideration; and the necessity of action in regard to it, becomes yearly more apparent.

It is evident that the River St. Lawrence is the natural outlet to the vast and fertile region bordering upon the great interior lakes of North America. Upon the improvement of this immense stretch of water communication, the Province has already expended over fourteen and a half millions of dollars, and established a scale of navigation, univalued in point of capacity, between Chicago and the head of ocean navigation at Montreal.

But it is to be regretted, that the experience of past years has proved that the benefits anticipated from these improvements have been, as yet, but partially realized; and that notwithstanding the undeniable superiority of the Provincial line, it has attracted but a small portion of the great stream of traffic, which flows from the grain producing districts of the West, to the Atlantic seaboard.

It is therefore evident that some powerful cause must be in operation, to produce a diversion of the trade from the channel which seems to have been marked out for it by nature, into lateral and artificial routes of much less capacity or speed, and greatly increased cost of transport.

The greatest drawback to the success of this route, as a competitor for European trade, is the high rates of ocean freight from Montreal and Quebec, when compared with those from New York. The latter city being the great commercial emporium of the Northern States, controls the bulk of the import trade; consequently, freights run lower at that port than any other on this part of the continent, because vessels arriving on with cargo can afford to carry produce to Europe cheaper than those trading to Quebec or Montreal, which, in great part, have to make the voyage here in ballast. Besides, as the staple exports of Canada are bulky, whilst the tonnage of her imports is comparatively small, it is evident that we cannot hope to compete for European freights, except by carrying so much cheaper on our line of internal communication, as to compensate for the disadvantage of the ocean voyage.

Although the minimum capacity of the canals is nearly double that of our most formidable rival—the enlarged Erie Canal; and, when taken in connection with speed, the season of navigation is equally as long as upon the latter; it is evident, from the existing state of affairs, that still further advantages must be afforded, ere we can obtain a fair share of the trade in question.

It is believed that the only means by which this can be effected, is by an enlargement of the Welland and St. Lawrence Canals to a uniform draught, and carrying capacity for vessels of at least 800 or 850 tons burthen.

This would permit the majority of the fleet of proçellers and large schooners now engaged in the transport trade on Lake Erie, to descend to Montreal and Quebec without breaking bulk; and there tranship into sea-going vessels—thus considerably reducing freights, and tending to bring about the desired result.

The manifest advantage in speed which the route possesses, together with the cheapening of freight referred to, would doubtless operate favorably in making Quebec and Montreal *entrepôts* for goods imported into the Lake Regions, and thus diminish ocean charges, by providing a larger per centage of cargoes both ways. It is also probable that the mercantile enterprise of these cities would not be slow to take advantage of such favorable circumstances. It must, however, be borne in mind that the export trade to Europe forms by no means the only important business for which the Provincial canals might successfully compete; as it is now well understood that a very large quantity of the cereals brought to Albany, is consumed in the New England States, and never leaves the country at all.

With a view, therefore, of pointedly drawing attention to the means by which it is believed that a large share of this, as well as the trans-atlantic trade, can yet be secured to the Province, reference is again made to the subject.

Even before the present Canal system was in full operation, it was foreseen that to ensure anything like an adequate return upon the large expenditure then being incurred, it would be necessary to complete the series, by connecting the waters of the St. Lawrence with those of Lake Champlain. By this means it was believed that we could successfully compete with the Erie Canal, either for the carriage of grain to the great centre of distribution for home consumption at Albany, or to New York for exportation to Europe.

The inhabitants of the Northern States on the Atlantic seaboard, being largely engaged in manufactures, have to import food from the agricultural districts of the West; and the magnitude of the trade thus created is estimated by various competent authorities, at from *five-eighths* to *three-fifths* of all the vegetable food which annually arrives at the level of tide water in the Hudson River.

It would therefore seem, that any well-matured scheme, by which the Provincial Canals might be made the principal channel for so large and profitable a transport, would be well worthy of consideration.

In the existing state of our connections, the cargo of a vessel arriving at Montreal, loaded with grain for the Eastern States, cannot be portaged to Lake Champlain, except at such an increase in the cost of transport as would nullify all the advantages of the St. Lawrence navigation, and give the Erie route a decided superiority in point of cheapness.

But were the River St. Lawrence united to Lake Champlain by a canal of dimensions equal to the enlarged scale of navigation above referred to, this serious drawback would then be removed; and the Province would reap the full benefit of the unequalled advantages which it ought to derive from the possession of the *natural* route.

The Annual Report for 1862, of the Auditor of Canal Tolls, &c., for the State of New York, shews that the average cost of transport of wheat from Chicago to New York, *viâ* Buffalo, or by way of Oswego (including canal tolls), was as follows:—

	1861.	1862.
1 Ton, Chicago to Buffalo.....	\$ 3.80½	\$ 3.49
“ Buffalo to New York.....	5.24½	5.27½
	<hr/>	<hr/>
Total,.....	\$ 9.05	\$ 8.76½
	<hr/>	<hr/>
1 Ton Chicago to Oswego.....	\$ 5.22	\$ 5.07
“ Oswego to New York.....	3.70	3.68
	<hr/>	<hr/>
Total,.....	\$ 8.92	\$ 8.75
	<hr/>	<hr/>

This does not seem, however, to include the cost of transhipment either at Buffalo or Oswego.

The vast increase in the trade of the latter port, since the opening of the enlarged Welland canal in 1845, clearly demonstrates the effect of extended natural navigation. Oswego, with vessels of from 250 to 400 tons burthen, which pass through the Welland canal, is able to compete with Buffalo, although propellers of 750 to 1000 tons burthen arrive there from Chicago.

This arises from the simple fact that there are about 118 miles less canal navigation on the Oswego route than on that *via* Buffalo to Albany.

The following table will shew the comparative amounts of produce which arrived at Oswego from the West, from 1845 to 1862:—

	Tons.		Tons.
1845.....	44,560	1854	72,975
1846.....	63,905	1855	124,004
1847.....	87,329	1856	222,542
1848.....	90,411	1857	104,332
1849.....	119,201	1858	172,674
1850.....	133,473	1859	93,345
1851.....	146,204	1860	249,069
1852.....	182,434	1861	277,679
1853.....	227,631	1862	276,237

It may, therefore, be fairly inferred that a proportionate success would attend the Champlain route, could vessels of large tonnage reach Whitehall without breaking bulk; and that the cities of Montreal and Quebec would also be greatly benefitted, as regards the increased facilities for transatlantic trade which would result by bringing the large inland vessel alongside of the ocean ship.

Even at present, a propeller of ordinary speed, can make the trip from Quebec to Lake Erie in about 5 days, and that from Lake Erie to Quebec in 4 days; whilst the voyage by canal boats, of less than one half their tonnage, seldom occupies less than 12 days between Buffalo and tide water in the Hudson river. Goods shipped from Quebec also reach the upper lakes earlier in the spring than those from New York *via* the Erie canal; and produce for the European market can be shipped later from Chicago, *via* Montreal, than by

the Buffalo route, for the reason that the voyage is made on the river and through our canals much quicker than by the Erie canal.

The tables in the appendix shew the dates of opening and closing of navigation at the port of Quebec, the St. Lawrence and Welland canals, the Erie canal at Buffalo, and the Hudson river.

The Champlain connection would also facilitate the large export of sawed lumber, which now finds its way into the United States, for home consumption, from various points along the Canadian frontier, by costly, and often circuitous routes; and would enable it to be laid down at the minimum of transport charges at the great lumber mart of Albany. It would also form a direct route for that portion of this staple product of the Ottawa valley, required for the American market.

Thus the trade, which now merely crosses Lakes Ontario and Erie into the United States, from the West and Upper Canada, would find a speedier and less expensive route to market.

This advantage would no doubt be quickly appreciated by merchants and forwarders.

By the return of the auditor for New York tolls, previously cited, the total movement in tons of produce of Western States and Canada, and other freight which arrived at tide water by the Erie canal in 1862, was as follows, viz. :—

	Tons.	
Flour in bbls.....	197,460	
Wheat in bulk.....	980,085	Tons.
	—————	1,177,299
Other agricultural products.....		791,142
Products of the forest		563,346
Manufactures		14,170
Other articles.....		48,880
		—————
Total from the West.....		2,594,837
“ From New York State.....		322,257
		—————
Total <i>via</i> Erie Canal to tide water.....		2,917,094
From tide water.....		399,098
Internal movement on canal		1,778,453
Arrived at tide water by Champlain Canal		485,615
From tide water, do. do. ..		18,525
		—————
Total movement on all the New York State Canals.. ..	Tons	5,598,785

STATEMENT of Grain, &c., which arrived at Montreal by the St. Lawrence Canals, from the Western States and Canada, in the years 1862 and 1863, furnished by the Collector of Canal Tolls :—

	Tons.	
1862.—Flour in bbls.....	83,323	
Wheat in bulk.....	234,250	Tons.
	—————	317,574
Corn, rye, barley and other grain.....		105,297

Pork, beef, butter, ashes, and other freight	333,999
Total downward, 1862	756,870
do upwards.....	125,794
Total movement on St. Lawrence Canals.....	882,664
	Tons.
1863.—Flour in bbls.....	75,444
Wheat in bulk.....	149,800
	Tons.
	225,241
Corn, rye, barley and other grain.....	62,223
Pork, beef, butter, ashes, and other freight.....	890,466
Total downward.....	677,933
do upward.....	113,489
Total movement on St. Lawrence Canals.....	791,422

The comparisons of movement of freight are chiefly confined to the Western trade, as bearing directly upon the question now under consideration. Thus in 1862, there was received at tide water in the Hudson River 2,917,094 tons, whilst only 756,870 tons, arrived at Montreal during the same year.

The returns also shew that the New York Central and New York and Erie railways carry about 35 per cent. of the aggregate freight moved both by them and all the New York State Canals, which total amounted, in 1862, to the large figure of 8,619,173 tons.

These facts shew conclusively that notwithstanding the great length of artificial navigation by the Erie route, it has, through the strenuous exertions and far-sighted policy of the State legislature, attracted an immense trade; the disadvantages of the route having been, as far as possible, obviated by continued and liberal expenditure upon its improvement.

The result has been, that last year a revenue of nearly 5 (five) millions of dollars was derived from this canal.

It is believed that the period has now arrived when it is still more imperative upon the Province to adopt a policy calculated to demonstrate the real superiority of the St. Lawrence route, by completing our canal system, and enlarging it to such dimensions as will place it beyond the reach of successful competition, in the cheap transport of imported goods for the Western market, or in the speedy export of the vast and overflowing vegetable products which now find their way through other channels to the Eastern States and to Europe.

WELLAND CANAL.

The idea of effecting an uninterrupted water communication between Lakes Erie and Ontario, appears to have been entertained by a few enterprising individuals, residing in the Niagara district, long before the means of carrying it into practice could be obtained.

For the gradual development of the scheme by which this was ultimately accomplished, the Province is, however, greatly indebted to the indefatigable exertions of the late Hon William Hamilton Merritt, who, for many years, devoted himself to the work of maturing our canal system.

Now that the period has arrived, when the demands of trade render it necessary to enlarge the capacity of this canal, a brief sketch of its early history, and the difficulties overcome in its construction, may not be deemed uninteresting.

As far back as the year 1818, the dividing ridge between the Chippewa River and the head of the Twelve Mile Creek, was examined with a view to the uniting of these points by a canal, and a profile of the route was shortly afterwards exhibited at York, to members of the legislature, which was then in session. No further action was, however, taken in the matter until 1823, when a line was surveyed; and in 1824 an Act was passed incorporating the Welland Canal Company, with a capital of £10,000, for the purpose of establishing a navigation from lake to lake, for boats of from 20 to 40 tons burthen. The canal to be four feet deep, seven feet wide at bottom and 19 feet at water surface.

Ground was broken on the 30th November, 1824, without any ceremony, nor did the public at that time seem to be at all aware of the importance of the work.

It was scarcely commenced, however, upon this small scale, when the people became rapidly convinced of the great benefits which its construction could not fail to confer upon the trade of the Province, and in 1825, upon a petition from the Company, Parliament resolved to increase the capital to £200,000, and to aid the undertaking by the loan of £25,000. This was done with the proviso that the company should construct a canal for *schooner navigation*, by increasing the dimensions of that originally designed, to 7 feet 6 in. depth of water, 34 feet width at bottom, and 52 feet 6 in. at top, except through the "deep cut," which was to be only 15 feet wide at bottom and 32 feet 6 in. at top. The locks to be made of wood, 22 feet wide and 100 feet long.

Although £75,000 of this increased capital stock was readily subscribed for in New York, and £25,000 in Upper and Lower Canada; some difficulty arose in disposing of the remaining £100,000 in the English market, which threatened seriously to interfere with the progress of the work. Under these circumstances, the legislature, in 1827, passed a Bill by which the Province became a shareholder to the amount of £50,000, and in the same year the Government of Lower Canada also aided the scheme by taking stock in it to the amount of £25,000.

In 1828, the company obtained a loan of £50,000 sterling from the Imperial Government at 4 per cent; being forced, from the embarrassed state of their finances, to apply for this, even though, by the acceptance of the loan, they forfeited a gratuity of £27,000 ster-

ing, offered to their agent by the Chancellor of the Exchequer upon certain conditions, chiefly relative to the passage of His Majesty's troops through the canal, free of toll.

But at the close of this year (1828), the engineer reported that disastrous slips had occurred in the "deep cut," which would increase its cost to a much larger sum than the original estimate.

Notwithstanding the occurrence of this, and many other unlooked-for difficulties, which both augmented the outlay upon the works and retarded their completion, the confidence of the projectors of the canal remained unshaken as to the ultimate success of the scheme. At length, by frequent legislative aid, coupled with indomitable energy on the part of the company, it was partly accomplished; and on the 30th November, 1829, a schooner of 85 tons burthen passed between Lakes Erie and Ontario via the Chippewa River. On the 20th May 1833, however, the main route was completed, on the same scale, to Port Colborne, and the original project thus fully carried out. In order to effect this, the Province took some additional stock in the undertaking that year.

Although a through navigation was thus secured, the locks and other structures being of wood, put together more with reference to present economy than stability, will account for the frequent failures, the large outlay for maintenance, and the financial difficulties of the company, which continued unabated after the opening of the canal.

These continued annually to increase, and although Governmental aid was given at various times, it became quite evident that the company were unable to maintain the works in that effective condition which their importance demanded.

Representations having been frequently made to that effect by the company, who urged that the work should be controlled wholly by the Government, the legislature, shortly after the union of the Provinces in 1841, passed an Act to purchase the rights of private stockholders;—subsequently transferred the management of the canal to the Board of Works,—and, by the Act 4, 5 Victoria, cap. 28, £500,000 was appropriated to enlarge and render this line of navigation permanent throughout.

Up to the 31st December, 1841, this canal was debited on the books of the Province with £462,856 18s. 10d.,

equal to	\$1,851,427 77
Debentures issued under Act 7 Vic., c. 34, for payment of back interest on stock, &c., &c	675,356 42
Amount expended under Department of Public Works for enlargement, erection of permanent structures, land damages, &c., up to 31st December, 1863.....	4,766,460.70

Total expenditure by the Province..... \$7,293,244.89

Of this amount about \$1,400,000 is chargeable to increasing the depth of water to ten feet on the mitre sills of the locks, and to widening and bottoming of the summit level, to admit the waters of Lake Erie as a feeder.

This latter work, from the commencement of the enlargement under this department, has been considered indispensable, from the gradual failure of the Grand River, as a feeder, to furnish the necessary supply.

But although arrangements were made for carrying it out, various unavoidable causes obstructed its progress, and it was proceeded with slowly, even after the Port Colborne

branch had been laid dry (and remained so for several years), with a view of affording an opportunity of executing the work to the best advantage.

The water was subsequently let in, and a contract made for its completion by means of steam excavators; but the parties to whom the work was entrusted failed to carry out their agreement.

At length arrangements were made with the present contractor, under whose energetic management the work has been conducted as expeditiously as its nature and attendant circumstances would permit.

The prism of the canal between Allanburg and Port Colborne has been nearly doubled in sectional area. The bottom width, originally intended to be only 28 feet, having been made 50 feet, to admit of two vessels passing each other at any place on the line. The depth has also been increased fully two feet for the whole distance.

This part of the work is now rapidly approaching completion on the scale above stated. The time, however, is not far distant, when its capacity must be still further increased.

But the work of greatest importance to be undertaken, is the construction of a new line of canal from Thorold downwards to Lake Ontario, with locks capable of passing a large class of propellers. This is believed to be so urgently necessary, that it cannot be too often brought under notice. As its execution will necessarily occupy several years, its early commencement becomes all the more imperative; and although the Department is not yet in possession of sufficient information to enable it to recommend any precise line, this can be readily obtained, and the extent of the necessary improvements determined, when the means of carrying them out are placed at the disposal of the Government.

By the Report of the Superintendent (Appendix B), it will be seen that the progress made during the past season with the work on the summit level, has been such as to warrant the belief that two seasons more will suffice for its completion.

In 1863, there was expended on it the sum of	\$49,981
Superintendence and contingencies.....	5,010

Total	\$54,991
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For the operations of next season, an appropriation of \$60,000 will be required.

The construction of a second tow path on the Thorold level, between Hurst's and Marlutt's Bridges--and the widening of the channel-way between these points, (alluded to in previous reports)--would so much facilitate the passage of vessels, that it is deemed advisable to bring the subject again under notice. The estimated cost of these works is \$18,100

Large fleets of upward bound vessels, being often detained at Port Colborne by winds which are favorable to downward vessels entering the canal, frequently leads to such an over-crowding of the harbor, as results in considerable delay and damage; which, it is believed, can only be obviated by increased accommodation.

This is the more necessary, from a large portion of it being generally occupied for purposes connected with the Welland Railway, at the southern terminus of which an elevator has been erected for the transfer of grain, and the lighterage of vessels of greater draught than those which can pass with full cargoes through the canal.

The railway, by affording facilities for lighterage, has tended to bring a larger class of vessels to this port, which has, no doubt, been beneficial to all the interests concerned.

It is therefore believed, that in view of the railway requiring further frontage and basin accommodation, it might be granted at such a point as would not interfere with vessels entering or leaving the canal, upon the company contributing a reasonable sum towards defraying the expenses of the enlargement.

The design of the harbor is such, that its area can be made one third greater than at present, without interruption to the trade or interference with existing works. Its enlargement, which is considered indispensable, is estimated to cost \$64,000.

During the season of low water, vessels of ordinary draught cannot pass through the cut between the Lock at Port Robinson, and the Wolland River. This is fully 1300 feet long, and is then barely six feet in depth. Since the works were assumed by Government, no outlay has been made upon it.

There being considerable trade on this route in sawed lumber, grain, &c, it is believed that the deepening and improvement of the channel, would be of sufficient advantage to warrant the outlay for the work, which is estimated at \$2,500.

The staunching of the dam at Dunville, referred to in previous reports, has been well tested during the past year, (the season being drier than usual,) notwithstanding which, the water has been kept up better than heretofore.

All the various works of repairs and maintenance have been promptly attended to, as they became necessary, and spare gates provided to meet any ordinary emergency which may occur during the coming season. On the 13th April navigation was opened, and was closed on the 13th December.

During the season, three interruptions occurred, by the breaking of lock gates, which collectively amounted to four days.

The storm of the 1st January of the present year has damaged the piers at Port Colborne harbor; but being now covered up by large masses of ice, an estimate of the probable cost of repairing them cannot now be arrived at.

Repairs, 1863\$15,392.02

Management, &c., 1863 40,855.98

Total,.....\$56,248.00

On reference to Appendix B, Schedule No. 5, it will be seen that large arrears are due for lands bought, and privileges acquired along the line of this canal, amounting in all to \$28,940.58.

As no payments have been made on these purchases for a number of years, it appears advisable that some action should be taken to recover the large sum in question.

REVENUE FOR THE LAST FOUR YEARS.

	1860.	1861.	1862.	1863.
Tolls.....	\$165,230.65	\$229,769.49	\$271,384.27	\$225,442.01
Collected on rents.....	7,686.97	8,967 20	7,363 90	9,014.79
Do. on lands &c.....	1,737.07	25.00	.....	516.33
Do. on fines and damages.	2,116.10	2,267.80	573 00	4,664.50
Total.....	\$176,760.79	\$241,029.49	\$279,321.17	\$239,637.63

WILLIAMSBURG CANALS.

These canals are the highest in the St. Lawrence series, and have less sectional area than any of the others; their bottom width in cutting being only 50 feet. The comparatively slight rapids which they were constructed to overcome, are generally navigated both ways by passenger steamers, so that they are principally used by upward bound freight craft.

They are now in three divisions, and are collectively $11\frac{1}{2}$ miles in length; but separated by stretches of river navigation $4\frac{1}{2}$ and 10 miles respectively in length.

When these canals were first opened, the embankments on the river side were, in many places, but slightly protected with stone, and the inner face of them was left wholly exposed to the action of the water. This has necessitated a considerable expenditure for the past few years in facing and lining them with stone.

During the past year, nearly one lineal mile of this class of work has been done, and the banks raised and strengthened at all the lowest and weakest points. Another season's work, even at this rate of progress, will complete the whole. With an ordinary outlay for repairs, these canals have been kept (in other respects) in an efficient state throughout the season of navigation, which commenced on the 1st day of May, and closed on the 7th of December.

One pair of lock-gates were built and brought into use last spring; but in order to be prepared for casualties, one pair of spare gates should be provided this year.

The north pier at the upper entrance of Rapide du Plat Canal, which for some years was much out of repair, has been rebuilt from the foundation upwards, for a length of 138 feet. The superstructure has, however, yet to be put on.

To remove slides, and the material deposited in these canals by the action of the water, previous to the banks having been lined with stone, a steam dredge was set to work in September last, and is found to be the most economical mode of clearing out the channel without interfering with the navigation.

The dredge can be similarly employed with advantage for the whole of the next season, as, now that the water in the St. Lawrence is low, deeply-laden vessels cannot pass through the upper reaches of the canals unless the channel be cleared out.

The necessity of proceeding with the several works recommended in the last annual report of this Department, but for which no appropriation was made, is urgently called for. They are as follows:—

The reconstruction of the swing bridge over lock No. 23, in the Village of Morrisburg.

The rebuilding of the outer part of the pier at the entrance of the Gallops Canal.

It is also very important that the swing bridge over the lock at Edwarsburg should be rebuilt. The guard booms in the rock cut on the Iroquois Canal are so completely worn out, as to be of very little service. It is, therefore, proposed that if the weather is favorable in April next, the water shall be drawn off the canal, and the sharp, angular points of rock, which now project into the cut, removed. The booms can then be entirely dis-
ed. with.

Repairs 1863 (including protection of banks, &c)	\$3,818.44
Management	\$6,046.12
	<hr/>
Total	\$9,864.56

CORNWALL CANAL.

This is the largest of the St. Lawrence Canals, being nearly double the bottom width of those immediately above it, and one fourth wider than those below. The locks are also 10 feet wider than any of the others which form the series.

By the carefulness of the superintendent, the high embankments forming the upper reach, which are constructed of porous material, have been maintained in good order throughout the season, at a comparatively small outlay.

For about a fortnight previous to the opening of the canal, on the 2nd of May last, the water was drawn off to enable the necessary repairs to be made. The season lasted for 223 days, having closed on the 12th December, with but a single interruption of 8 hours, viz., on the 20th of August, whilst repairing one of the mitre sills of lock No. 19.

The three pairs of spare gates delivered last year make, together with those on hand, 8 pairs in all. It is believed that these are sufficient to meet any ordinary contingency for some years.

The various works referred to in last year's report as being required, have now become urgently necessary. They are as follows, viz :—Rebuilding the wharves at the upper and lower entrances of the canal, and the wharf adjoining the Town of Cornwall.

The other matters necessary to be attended to are the raising and protection of the embankments during the coming season, for which 200 cords of stone should be furnished this winter, and mooring posts provided and fixed.

Some of the recess platforms of the locks require to be replanked, and new segments provided and laid before the opening of navigation. No steps having been taken by the lessees of the water-powers at Cornwall to place the head gates to their mills in proper repair; the superintendent reports that if this be not attended to at once, danger may be apprehended to the safe navigation of the Canal.

It therefore seems advisable to notify them, that unless these repairs at once effected, before the canal is opened next spring, that the water will be cut off from their mills by dams or otherwise.

Repairs, 1863	\$2,089.74
Management	10,089.61
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Total	\$12,179.35

BEAUHARNOIS CANAL.

This canal is the only one of the series which is located on the south shore of the St. Lawrence. It passes through a well settled part of the country, and is consequently crossed by a large number of swing bridges. These, together with the long dykes on both sides of its upper entrance, rendered necessary by the backing of the water there, considerably increase the cost of maintenance. 4000 lineal feet of the dyke through Hungry Bay was raised last year, for a height of about 20 inches, and a like extent will have to be done during the ensuing season. The dam, built across a branch of the St. Lawrence to deepen the upper entrance, requires constant care and watchfulness to maintain it efficiently.

The bridges are generally in good repair, with the exception of that over the guard lock at the head, which should be rebuilt before the opening of navigation.

The superstructure of the pier at the upper entrance requires to be rebuilt, and suitable timber should be delivered this winter for that purpose.

The by-wash at St. Timothy was partly repaired last spring; but some leakage having been found in it last summer, it will require further attention before the season opens.

It was intended to have repointed the lock walls at many places last spring; but the weather having proved unfavorable, this work was not done.

It must, however, be proceeded with next season.

Three pairs of new lock-gates were provided last year, one of which was immediately brought into use at Lock No. 8. There are now six pairs of spare gates on hand; but some of them being old gates repaired, it is believed that 2 pairs of new upper gates should be provided this year.

The pier at the lower entrance, referred to in the last annual report, and for the extension of which no appropriation was made, should be lengthened in order to afford sufficient accommodation for vessels navigating the canal: as much inconvenience and delay are experienced from large numbers being collected there without having proper mooring space. It is important that this work should be done next season. Its estimated cost is \$7000.

The navigation of this canal, which was opened on the 2nd of May, was maintained until the 4th December, with but one interruption of about 18 hours, whilst repairing the lower gates of lock No. 10, which were carried away by a vessel. This occurred on the 16th May last.

The repairs for 1864, generally of an ordinary nature, are estimated to cost \$7,165.

Management, &c., 1863	\$8,857.31
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Repairs. do	6,113.33
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Total.....	<u>\$14,970.64</u>
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LACHINE CANAL.

The Ottawa River enters the St. Lawrence above Lachine by two branches: one opposite the foot of the Beauharnois Canal, and the other (or navigable channel) a few miles further down Lake St. Louis.

The influx of this large body of water has the effect, in time of floods, of greatly increasing the fluctuation to which the St. Lawrence itself is liable, and necessitates all the works at the head of the Lachine Canal being adapted for a variation of at least seven feet between extreme high and low water.

The repairs of wharves, dock-walls, flour sheds, &c., at the foot of the canal, together with those required at Lachine, greatly increase the annual cost of maintenance.

The excessive current produced in this canal by the inordinate supply of water used for milling purposes at various points along the line, has led to so much difficulty in its navigation, as to be a heavy tax upon the trade.

Representations to this effect having been frequently made by forwarders and others, this Department, several years ago, took steps to limit the supply to what was then in use.

But, notwithstanding the uncertainty of furnishing even that quantity of low water, and the well known injury inflicted on the trade, some of the lessees claim the right to a greater supply than they at present receive, although they have already fully double the amount of power considered available at the time when the leases were granted.

It would, therefore, appear that the interests of these parties are directly opposed to the successful and unimpeded navigation of one of the most important of the canals; and, with a view of settling these matters, the whole question is now before the Provincial Arbitrators.

Another great drawback upon the trade is the deficiency of wharfage and basin accommodation at Montreal; vessels being frequently detained several days waiting for a berth at which they can unload. This has been frequently referred to in the annual reports of this Department; but no means having been appropriated for the purpose of remedying it, it is therefore considered advisable to draw attention to the urgent necessity which still exists for these improvements.

The enlargement of the St. Gabriel Basin (for which plans were prepared some years ago) would afford about 3,000 lineal feet of additional wharfage, where a large number of inland vessels could lie at one time, and by this means room would be available in basin No. 1 for the larger class which it is intended to accommodate.

To facilitate the transfer of grain into the larger vessel, the deep water basins referred to in the report of last year, and proposed to be constructed between the present canal and St. Etienne Street, on the property acquired by Government for that purpose, are still urgently required.

As regards their cost, it is believed that the funds arising from the sale or lease of warehouse and other lots adjoining them, would eventually pay for their construction, and would also bring into use a large and valuable tract of land which is now entirely unproductive.

For the accommodation of the inhabitants of the west end of the city, a bridge at the St. Gabriel Lock is much required. This would relieve the Wellington Street Bridge, which is now often inadequate to accommodate the large travel over it.

A regulating weir and raceway at this lock are also urgently required. The probable cost of these works will be submitted in the estimate for 1864.

This canal was opened on the 4th of May, and closed on the 10th of December, without any interruption to the navigation (arising from accident) during the season.

The bridge above lock No. 2 was in great part renewed last year; and materials provided for the repairs of Brewster's and Côte St. Paul Bridges, this winter.

A pair of lock gates suitable for either of the locks at the lower entrance, were provided last year. The canal is now well supplied with spare gates, with the exception of one pair required for the guard lock, which must be built this winter.

The steam dredge and scows were put in good order last spring, and have been employed during the entire season clearing out basins Nos. 2, 3 and 4. The expenditure on which was \$4,453.11.

The principal repairs to be attended to this year are as follows:—

Pointing the lock walls. Repairs to bridges and regulating weirs

Repairs to flour-sheds, wharves, banks and slope walls, &c.

These are estimated to cost \$10,000.

Management &c., 1863	\$11,391.14
Repairs, do	9,608.10

Total	\$20,999.24
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Collected for fines and damages by order of the Superintendent. \$	289.00
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Dues on firewood at Lachine.....\$	271 65
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Do. lumber in basin do.	1,075 45
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1,347.10

Use of old lock at Montreal as a graving dock.....	684.25
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Vessels wintering in canal.....	584.75
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Storage in flour sheds.....	3,181.11
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Wharfage on vessels entering canal from lower ports, and on firewood.....	5,530.70
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Temporary use of canal lands for repairing vessels during winter of 1863-4.....	190.00
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Rent of water-power and other property.....	11,417.50
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Total.....	\$23,224.41
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CHAMBLY CANAL.

The trade by this route during the last season has greatly exceeded that of any preceding year; the revenue from tolls having amounted to \$25,070 66.

Within the past few years, several of the locks on this canal have been rebuilt, and the defective parts of other structures thoroughly repaired, so that the works are now in a moderately good condition, except the guard lock at St. Johns and one of the combined locks at Chambly, which will shortly require extensive repairs.

The unusual height of water in the Richelieu during the months of May and June last, led to considerable damage by softening the canal banks, and causing slides, especially on the river side.

A large amount of deposit has been formed in the canal bottom during the period of freshets by the numerous creeks, ditches, &c., which discharge into it. This impedes the passage of large flat-bottomed vessels, and otherwise leads to considerable detention.

The removal of such obstructions by hand labor in the spring being very expensive. It is therefore proposed to perform this work by dredging during the season of navigation.

Last winter, the staff of the canal were employed in constructing a pair of new gates for lock No. 4, and in rebuilding one of the swing-bridges. They also placed all the lock gates and bridges in good working order.

This canal was opened on the 1st of May, and closed on the 8th of December. The only detention experienced was from the causes above mentioned.

The banks between locks Nos. 3 and 6 have been raised, and such other portions as required it have been strengthened and protected with stone. The ordinary repairs were also attended to during the season.

The cost of repairs for 1868 was.....	\$ 8,430 62
For management, &c.....	6,022 50
Total.....	<u>\$14,453 12</u>

The flooring of several of the locks has been displaced, and it will be necessary to replank them before the opening of navigation.

The upper gates at locks 2 and 4 must be rebuilt, and those at 5 and 7 thoroughly repaired.

The superstructure of part of the wharf at St. Johns must be renewed; and the clearing out of the bottom of the canal and further protection of the banks proceeded with, together with repairs to locks, bridges, &c. All of which are estimated to cost \$7,560.

ST. OURS LOCK AND DAM.

The high water in the Richelieu in May and June last, inundated a large portion of these works; and the ice injured the west abutment of the dam and wing wall of the lock. These damages have been repaired, and precautions taken to guard against further injury from a similar cause.

During the season, part of the apron cribs below the dam, and some sink holes above it, have been filled with stone.

The protection walls, banks and piers below the lock have also been repaired, and such other work done as became necessary during the season. The cost of which was:—

For repairs.....	\$2008 70
Management.....	1,210 70
Total.....	\$3,219 40

The balance on hand from last year will, it is believed, be sufficient to effect the ordinary repairs of the coming season.

Navigation by this route commenced on the 27th April, and closed on the 3rd day of December. It was interrupted in all for about 30 hours, whilst adjusting the lower gates of the lock.

STE. ANNE'S LOCK.

The returns from this lock shew a considerable increase in the trade during the past year; but there has been, nevertheless, a decrease in the revenue, in consequence of the rates of toll having been lowered.

A very small expenditure took place last season upon these works. But from the report of the superintendent (Appendix C), it appears that the superstructure of the wing dam above the lock, for a length of 200 feet, is much decayed and requires immediate renewal. About 500 feet of the inside of it should also be sheeted with elm plank, and the docking on the river side below the lock should also be protected, to prevent damage from rafts or ice during high water.

These works, together with providing some mooring posts, &c., are estimated to cost \$1200. The Ottawa, via this route, was opened on the 28th April, and navigation was continued without interruption until closed, on the 5th December.

Management, &c., 1863.....	\$464 82
Repairs, &c., do	72 52
Total.....	\$537 34

Tolls, &c., collected amounted to..... \$5018 64

CARILLON AND GRENVILLE CANALS.

No expenditure has taken place on these canals since their transfer to the Government in 1856, beyond what has been found absolutely necessary to maintain them in a passable condition—owing to the scale of navigation being so limited, and many parts of the works radically defective in location.

Eight of the locks are from 128 to 132 feet long, and from $32\frac{1}{2}$ to $32\frac{3}{4}$ feet wide, whilst the remaining *three* are only from $106\frac{1}{2}$ to $108\frac{1}{2}$ feet long, and from $19\frac{1}{2}$ to $19\frac{3}{4}$ feet wide, with barely five feet draught of water.

The prism is also of very irregular form, the bottom width varying from 18 to 40 feet, and that at the surface from 50 to 90 feet.

The navigation of these canals opened on the 1st of May, and closed on the 2nd of December, with only one interruption of $2\frac{1}{2}$ days during the season, which was caused by the failure of one of the lock gates. 4 pairs of new lock gates were built last season, and will be brought into use next spring; 8 pairs are, however, now required, and should be constructed before the opening of navigation.

The superstructure of the pier at the head of the Grenville Canal was rebuilt last year, and such other indispensable repairs effected, as were necessary to keep the canals open.

In August and September last, the water of the Ottawa being unusually low, the depth at the upper entrance of the Grenville Canal was so much reduced as to cause serious detention to vessels at that place.

A few years ago, a channel was partially cleared out by means of a float and scoop, worked by a capstan from the shore. This process, although slow, was tolerably effective; but the channel being narrow, and the banks steep and gravelly, the action of high water and frost on them has again tended to fill it up, so that the passage of loaded square-bottomed barges is greatly impeded at periods of low water.

To remove these obstructions, it is proposed to employ a dredging machine next summer, the expenses connected with which are estimated at \$1200.

The structures on these canals are generally in a very bad condition, and considerable repairs to them must now become frequently necessary.

The north wall of lock No. 2 leaks considerably, and will require to be staunched next spring, by pointing both sides and puddling in the rear.

The breast wall of lock No. 10, must also be re-built, which, together with the general repairs to the other locks, is estimated to cost \$2,035. Repairing dam at North River, and clearing out feeder, together with the removal of deposit from the canal bottom, raising the banks, &c., \$3,225. Making the total estimated outlay for repairs next season to be \$6,460

Management &c., 1863.....	\$4,105 24
Repairs, do.	4,935 54

Total.....	\$9,040 78
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RIDEAU CANAL.

The works on this line of navigation have been maintained in a serviceable condition during the past season, with less expenditure than heretofore, which may be accounted for by the fact that several of the most extensive and dilapidated structures have been rebuilt, and others thoroughly repaired since the canal was transferred to the Government.

As stated in previous reports, many of the works were then in a ruinous condition; and from the comparatively small revenue derived from the traffic, the outlay has been confined to such works of maintenance as could not be dispensed with.

The navigation of this canal, which was opened on the 1st May, and closed at the end of November, was uninterrupted throughout the season. The flood of last spring, although nearly as high as that of the preceding year (which caused so much damage), passed off without accident to the works; ample provision having been made for its control, in the new structures. There is, however, some difficulty experienced from jams of ice and drift-wood in the spring, to remedy which, booms will have to be provided.

A thorough repair of all the numerous works on this long line of canal would, of course, involve a very large outlay, besides being at variance with the policy which has hitherto guided its maintenance. Although, no doubt, desirable, it could not, however, be recommended as an expenditure upon which an adequate return might be anticipated.

The superintendent, in his report of last year (*Vide* Appendix D.), estimates the cost of placing the canal in fair condition at \$16,317 93; but adds that some of the works embraced in this estimate might be postponed for another season. By this means, the expenditure for next year would be reduced to \$8,777.43, which should be increased by the cost of six pairs of new lock gates, which appear to be urgently required. This would make a total of \$13,577 33.

Various applications having been received by the Department for additional bridges along this line of canal, rendered necessary for the convenience of the public by the increase of settlers and the erection of mills in the vicinity, it is believed that, considering the small number of these structures now existing, and the long distances by which they are separated, the memorials for the erection of others may, in some cases, be favorably entertained.

BURLINGTON BAY CANAL.

In November last a vessel, in entering this canal, struck both the side piers with such force as resulted in the sinking of the vessel, but caused very little damage to the works. The vessel was, however, raised soon afterwards, without interruption to the navigation.

All the principal works are otherwise in good condition, and have required no outlay for maintenance last year.

But the ferry scow, which has been in use for many years, is now nearly worn out. The construction of a new one and certain repairs to the wale pieces, &c, are estimated by the superintendent to cost \$600. He has been authorized to have these works executed.

INLAND NAVIGATION—NEWCASTLE DISTRICT.

The nature and situation of the works on this line of navigation are such as to call for considerable annual expenditure. If the necessity for maintaining them however, continues to exist, the outlay must, of course, increase in proportion to the decay of the structures.

Many claims have been, and still continue to be made, for damages alleged to arise from various causes in connection with the works; and as they yield no revenue whatever, whilst the cost of their construction, management, &c., has, so far, been borne wholly by the Government, it seems reasonable that the parties or localities benefitted should contribute towards keeping them in repair, either by the payment of tolls, or by the municipalities assuming their control and the responsibility of their proper maintenance.

During last season, some repairs were made to the dam at Bobcaygeon, and the lock gates put in better working order. The dam requires to be further staunched next season, and the lock should be cleared out.

Some repairs and additional gravelling are required to the dam at Buckhorn. The navigation of the Scugog River is obstructed by sharp bends in its course, together with fallen trees and stumps, which should be removed,

The dam at Lindsay was repaired and staunched last season, and the slide in connection with it placed in better condition.

The construction of a bridge over the Scugog at the Town of Lindsay was placed under contract in June last. It consists of three spans. The piers and abutments are of a good class of masonry; the superstructure is of timber work. The approaches have been executed by the municipality on a valuation previously fixed by the chief engineer, with the proviso that the Corporation should assume all responsibility in connection therewith.

The contract works have not been proceeded with in an expeditious manner, and the coffer dams yet remain to be removed, besides several minor matters still to be attended to.

On the completion of this work, it will be transferred without delay to the Corporation of Lindsay.

Repairs for 1863.....	\$1,044 21
Management.....	856 50
Expenditure connected with Lindsay bridge.....	3,018 67
	\$4,919 38

LAKE ST. PETER.

The deepening and improvement of the navigable channel between Quebec and Montreal was assumed in 1860 as a Provincial work; but the Montreal Harbor Trust (under whom operations were carried on for the previous nine years) were still charged with its management under certain stipulations, chiefly regarding the dimensions of the channel and the relative responsibilities of the Government and that Corporation for payment of the expenditure incurred in completing the work.

In accordance with the understanding then arrived at, and for the guidance of this Department, the chief engineer was instructed to obtain by personal examination, the necessary information regarding the mode of conducting the dredging operations, together with the progress made, and the financial and other arrangements connected therewith; but, from several unavoidable causes, his report has been delayed. In the meantime, however, he furnishes the following statements respecting the matter in question.

Commencing at Montreal and proceeding downwards, the channel-way at Pointe-aux-Trembles and Verchères has been deepened and improved to a depth of 20 feet.

Between La Valtrie and Isle Plate, there yet remains about two miles in length which, at low water, is now only 18 feet in depth.

At the upper part of Lake St. Peter, there are yet between $3\frac{1}{2}$ and 4 miles to be deepened from $1\frac{1}{2}$ to 2 feet. From this point to the foot of the Lake, the channel is the full depth of 20 feet at low water. Thence to Quebec, there is also a like depth; but the channel would be much improved by removing a small shoal which lies off the mouth of the Becancour River. This shoal is not marked on the Admiralty Chart. It is of small extent, and has 17 feet over it at low water.

The point of the shoal opposite Ste. Anne de la Parade, should also be removed. There are also three small shoals or "Poullier," one off Cape Levant, another a short distance below this, and the third off Cap La Roche. These should be deepened.

The work to be done at the various points enumerated above, appears to embrace all that is necessary in the way of dredging, to establish a ship channel of 20 feet in depth, at low water, between Montreal and Quebec.

Additional buoys will, however, be required at various points to more clearly mark it out.

In order to execute this work as rapidly as possible, it is very desirable that all the dredges and plant [under the trust] should be thoroughly repaired; and that those generally employed in the Lake should continue their operations until the full depth is obtained. The dredges employed in the Harbor of Montreal [owned by the Commissioners] should also be brought down to La Valtrie, for the purpose of simultaneously dredging the channel to the required depth at that point.

The obstructions referred to below these places, can be subsequently attended to; and it is believed that were the dredges kept constantly at work in the manner indicated, that the whole might be completed by the season of low water in 1865.

The following is an abstract of the Expenditure, &c., on these works, up to the 31st December, 1863 :—

**SOURCES FROM WHENCE THE TRUST OBTAINED FUNDS FOR THE PROSECUTION OF THE
WORKS.**

Debentures issued.....	£170,000	0	0
1852 to 1860—Tonnage dues collected.....	24,881	17	9
1859. Advance on account of Plant.....	15,000	0	0
1860. Do work done.....	16,000	0	0
1862. Do do	4,487	4	5
Received from Trinity House and other sources.....	1,294	16	5
	<hr/>		
	£231,663	18	7
1851. Delivered to the Harbor Trust by government when the works were assumed by the Trust: Plant, &c., at Trust's valuation.....	9,000	0	0
	<hr/>		
	£240,663	18	7
	<hr/>		
Total.....	\$962,655.	71	

**EXPENDITURE ON LAKE ST. PETER AND THE RIVER ST. LAWRENCE IMPROVE-
MENTS UNDER MONTREAL HARBOR TRUST.**

Expended for outfit and dredging operations, from 1851 to December 31st, 1862.....	£227,606	10	10
Paid for interest on debentures, &c., from 1851 to 5th January, 1860	60,438	7	10
	<hr/>		
Total.....	£288,089	18	8
	<hr/>		
	\$1,152,159.	78	
Expenditure for 1863, on dredging operations, outfit, &c.	85,484.	64	
	<hr/>		
Total expenditure.....	\$1,187,644.	37	
Amount received by trust (as above shewn).....	962,655.	71	
	<hr/>		
Excess of expenditure over receipts.....	\$224,988.	66	
Present estimated value of Plant.....	120,000.	00	
	<hr/>		
	\$104,988.	66	

LAKE AND RIVER LIGHT-HOUSES, BUOYS, &c.

ABOVE LACHINE.

It is the practice of this department annually to invite tenders for the principal supplies required for the light-house service. A vessel is subsequently chartered for their delivery, which generally occupies from 15 to 20 days.

To enable this system to be properly carried out, the superintendent makes a return in detail of the articles on hand each year, and in the spring submits a statement of the supplies required for the ensuing season.

On the completion of his annual inspection, he reports the condition of the lighting apparatus, towers, &c., at the respective stations.

Works of general repairs and maintenance are executed under the immediate orders of the superintendent; but in carrying out those which involve large outlay, the localities are usually visited and plans for them matured by the chief engineer. There are fifty-one light stations under the control of this Department. At three of these one keeper has charge of two lights—at four stations there are two keepers to one light—and at Port Dover the Company who purchased the harbor provided a light-keeper:—thus the average throughout is one keeper to each light.

The light keepers are considered permanent officers, and are retained whilst they continue faithfully to discharge the duties entrusted to them. They are paid fixed salaries, according to the service performed. Each keeper makes a quarterly return of the articles consumed at his station, together with a statement of the supplies on hand; and notes any special occurrence which takes place during that period.

The lights are exhibited from shortly after sundown until a little before sunrise, commencing (in the lakes) generally between the 1st and 15th of April, and continuing until between the 15th and 25th December, each year; and in the river, the time of lighting up in the spring and extinguishing in the fall, is regulated by the opening and closing of the navigation.

Thirty-nine of the light houses are now illuminated by means of coal or mineral oil; and it is intended that all the other catoptric or reflector lights shall be fitted up this year for the use of that kind of oil. No change is, however, at present contemplated in regard to the lenticular lights, on Georgian Bay and Lake Huron.

The usual repairs incident to such works have been promptly attended to during the past year; and several of the structures connected with them have also been rebuilt or strengthened. Of the latter class are:—

The construction of protection works adjoining Point Claire light-house pier; raising and securing the superstructure on which the Lancaster light stands. Thoroughly overhauling the hull, and renewing the deck of the light ship moored in Lake St. Francis. Painting and fitting up light ships, Lake St. Louis.

Arrangements have also been made for the erection of a dwelling house for the light keeper at Wolfe Island.

The construction of additional protection works on the lake side of the light-house on Pelée Island, Lake Erie, rendered necessary by the action of the waves during high winds, by which the north point of the island was cut away.

Filling, and levelling up with a heavy class of masonry in hydraulic mortar, the interior of the caisson on Point Pelée reef; putting on and securing iron bands round the structure; caulking and painting the light-house and constructing a landing place; putting up boat cranes and other necessary fixtures for the convenience of the keepers, and for the delivery of stores.

The works at Point Pelée are well advanced, but not yet completed. Several of the repairs and works recommended in the previous reports of this Department, but for which no means have been provided, are of course, through lapse of time, now more urgently necessary. The principal of these are :—

A new range light at Grosse Point, head of Beauharnois Canal; further protection works, and a new lantern at McKie's point, Lake St. Francis; building a pier round Gull Island light-house, on Lake Ontario, (indispensable to its safety); construction of a break-water at Long Point light-house, Lake Erie; and also at Nottawasaga Island, Georgian Bay. All of which, together with ordinary repairs, are estimated to cost \$8,500.

The cost of ordinary repairs, maintenance and salaries last year (1868) was as follows :—

Repairs.....	\$ 2,346.52
Supplies.....	4,047.61
Coal oil.....	2,452.90
Sperm oil.....	4,737.50
Charter of steamer.....	1,500.00
Salary and travelling expenses of Superintendent.....	2,295.00
Light-house keepers salaries.....	17,827.84
Placing buoys and light-ships.....	304.87
Advertising and printing.....	988.48
Total.....	<u>\$36,000.72</u>

LIGHT-HOUSES BELOW QUEBEC.

The only work of any extent which was carried on under this department, in connection with this service during the past year, was an addition to the light-house pier at Crane Island Shoal, rendered necessary in order to protect that structure from the effects of the batture ice. This was put under contract in the latter end of September, but before it was quite finished, the winter had set in. It will be resumed and completed next spring.

Nothing has yet been done towards the construction of lights either on the Bird Rock or Cape Ray. The importance of these has been repeatedly pointed out by mariners, by the Quebec and Montreal Boards of Trade, and by others directly interested in the Atlan-

tic trade. It has also been frequently brought under notice in the annual reports of this Department, and the sites for the light-houses in question have been examined and reported upon in detail by the chief engineer, who also suggests the mode of carrying out the works.

The objects to be obtained by these improvements are: the diminishing the risks of navigation; the reduction of rates of insurance; and the general benefits which would consequently ensue to the trade.

It is believed that these considerations are of such importance as to demand the early construction of leading sea lights at the two places above named; and this becomes all the more necessary, in view of the enlargement of the Provincial Canals, by which a larger share of the Western exports to Europe will doubtless be secured to vessels navigating the River and Gulf of St. Lawrence.

TUG SERVICE, UPPER ST. LAWRENCE.

In order that the vessels passing through the canals may experience no delay on the river and lakes connecting the St. Lawrence Canals, it is necessary that an efficient tug service should exist on each of the four sections, viz :

From Lachine to Beauharnois Canal.

" Beauharnois Canal to Cornwall Canal.

" Cornwall Canal to Prescott.

" Prescott to Kingston.

This service has for many years past been sustained by Government subsidies, which have decreased from time to time, as the trade of the St. Lawrence increased. Thus, the bonus given with the contract which expired in the fall of 1860 was \$24,000; with that which expired in 1862, \$20,000; and with that of 1863, \$16,000, with a tariff of ten per cent. less than that of the former contracts. The business done during the past year is given in the following statement taken from returns furnished by the contractors. It exhibits the number of towages on each division up and down, and the amounts collected under the contract tariff :

UPWARDS.

Lachine to Beauharnois Canal	939	\$ 6,440.54
Beauharnois Canal to Cornwall	640	9,169.79
Dickinson's Landing to Kingston	559	18,665.09

DOWNWARDS.

Kingston to Dickinson's Landing.....	449	10,141.88
Cornwall to Beauharnois Canal	482	4,618.62
Beauharnois Canal to Lachine	704	3,438.79

	3773	\$52,474.71
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As compared with the business of 1862, this shows a falling off in the number of towages of 13½ per cent., and in the amount collected of 23 per cent.

It was feared that if the Government were suddenly to withdraw its aid and control, without giving due notice and affording time for the preparations which such a proceeding would render necessary on the part of the forwarders to enable them to carry on their business, the trade would suffer considerable inconvenience and loss. Tenders were therefore, invited last summer for the performance of the service for a period of three years, commencing the 1st May, 1864. Two were received, one asking a bonus of \$10,000, and the other \$12,000, a year: the tariff for towage in both cases to be 10 per cent. lower than that of previous years.

But, as the latter tender offered to place a greater number of vessels on the line, and was, in other respects, advantageous, it was considered that the service would be more efficiently performed, and the public interests best consulted, by its acceptance. Arrangements were therefore entered into for one year, with Messrs. Calvin and Breck, who had hitherto carried out their contracts for similar service in a satisfactory manner.

RIVER WORKS.

OTTAWA WORKS.

All the public works upon the Ottawa and its tributaries under the charge of this Department were placed in good order by the superintendent during the last winter, and withstood the pressure of the spring floods, the shoving of the ice, and the passage of more than the usual number of cribs of timber and saw logs, without suffering any serious damage or calling for more than the ordinary repairs. They have been maintained throughout the year in perfect working order, and a moderate outlay will now suffice to keep them in the same efficient state for the business of the present year.

The cost of repairs and management for the past year, notwithstanding the increase of business, is nearly the same as for the previous year, as may be seen by the following statement :—

	Amount charged to Revenue in 1862	and in 1863.
For repairs	\$ 4,856.46	\$ 4,376.86
Management.....	10,895.89	11,410.09
Total.....	\$15,752.35	\$15,786.95

To facilitate the running of timber down the main channel of the Ottawa river, it was found necessary to clear it of certain formidable obstructions lying directly in the course of the crib channel at Portage du Fort, and at the upper entrance of the Little Chaudière slide.

The former of these obstructions, known as the Black Rocks, was successfully removed by blasting. The latter consists of a rocky shoal, the excavation of which was placed under contract; but, owing to the failure of the contractor, it is not yet completed. It is, however, expected that the work will be finished by his securities in due time, before the rise of water in spring. The expenditure on these works is included in the foregoing statement of the cost of repairs for 1863.

The necessary repairs for 1864 are estimated by the superintendent to cost \$4,910.22. A detailed statement of them is given in his report, Appendix E.

It being necessary that these repairs should be completed before the breaking up of the ice in spring, authority of Council was obtained for proceeding with them during the winter. They are now well advanced, and it is confidently expected that all the works will be placed in good order before the spring business commences.

As regards the lumber business of the past year, it is satisfactory to observe a continued increase in this branch of our productive industry. The returns present the following result for the past two years :

	1862.	1863.
The number in 1862 and in 1863 of pieces of square timber from } the Upper Ottawa which passed the Chaudière slides, was }	326,781	351,255
Of saw logs which arrived at the Chaudière.....	90,000	120,000
Of square timber brought down the Gatineau river.....	9,251	no return
Of saw logs brought down the Gatineau river.....	154,918	221,194

NEW WORKS.

RIVER DU MOINE.

The improvements authorized on this tributary by the appropriation of \$8,850 of the last session of Parliament were completed last spring. They extend from the mouth of this river to the head of the Long Rapids, a distance of 45 miles, and consist of the various works enumerated in the report of the superintendent, given in the Appendix E. For a considerable distance above the Long Rapids the river is free from any natural obstruction to the running of timber, and the effect of these improvements has been, as originally intended, to open up 80 miles of this river to the lumber trade. So far as they extend, they answer the purpose and have given general satisfaction; but application has recently been made to this Department for further improvements on the upper part of it on the ground that the proprietors cannot avail themselves of their limits, on which they have to pay Crown dues, nor bring down to market the timber cut upon them, until these obstructions are removed.

Without some more satisfactory information in reference to the situation, nature, and extent of the improvements called for than is at present in the possession of this Department, it is impossible to form any opinion as to the propriety, or otherwise, of undertaking them as public works. For the purpose of obtaining such information of a reliable character, the superintendent has been instructed to make an examination of the river, to report upon the application, and to submit an estimate of the probable cost of the proposed improvements.

THE PETEWAWA.

Further improvements have likewise been prayed for by the manufacturers of lumber and holders of licences on this river, to enable them to carry on their business successfully. Their memorial having been referred to the superintendent, an examination of the river was made by him at the season of low water, in August last. From his report it would appear that the several improvements asked for by them, and estimated by him to cost \$18,847.89, are of a class that might legitimately be undertaken as a portion of the public works on that tributary, provided the parties getting out lumber on it agree to pay an additional toll, to make good this expenditure. He remarks that, "as the Petawawa is one of the principal feeders of the Ottawa, and the lumberman has made little or no encroachment on its upper forests, it appears to me that the extension of the chain of river works as far as Cedar Lake would be advantageous both to the Government and the lumberman; since, with reasonable tolls throughout, the lower works already constructed by the Department would yield an increased revenue, and large quantities of valuable timber that might otherwise be destroyed by fire or be left standing in the woods would be taken to market." There are not less than ten limits still further up the stream that would be affected by the proposed improvements between Cedar Lake and Trout Lake which would thus be made to yield revenue.

THE COULONGE.

It appears to have been the settled policy in reference to the public improvements on the Ottawa, ever since their first commencement, to confine the public expenditure as much as possible to the main channel of the river, and only to extend it to such of its principal tributaries draining large and valuable tracts of well timbered lands as were of sufficient magnitude and importance to warrant the improvement of them as public works, leaving the minor streams to private enterprise.

But, from the nature of the lumber-trade, private enterprise is always in advance of the Government Works. In extending these operations up the numerous tributary streams, all abounding in valuable timber, the lumbermen often find it necessary to undertake the construction of extensive works, to enable them to get out their property and protect it from injury in passing the rapids, the cost of which is just so much sunken capital.

To avoid such unprofitable investments, as well as to secure the advantage of authoritative control, they call upon the Government to make the improvements and maintain the booms as a part of the system of public works. But, coming from interested parties, such applications have to be entertained with caution.

Inquiry must first be instituted as to the nature and cost of the works, the character and extent of the forests, and the probable production and permanence of supply.

Up to this time the public expenditure has been confined to the four great tributaries:—The Gatineau, the Madawaska, the Petawawa, and the Du Moine.

This Department is now called upon by the holders of limits and parties engaged in getting out square timber and saw-logs on the River Coulonge, who have sustained great losses on their property, to undertake the improvement of this river as a public work; and steps have been taken to obtain the necessary information. The superintendent has examined the river and submitted a plan and estimate of the works that are required for its improvement. It appears from his report that the difficulties to be overcome are of rather a formidable character.

The chasm at the High Falls necessitates the construction of a slide upwards of half a mile in length, to pass a fall of 125 feet in this distance; and in one place this slide must be suspended against the face of a perpendicular rock rising forty feet above the surface of the water. The cost of this slide is estimated at \$13,590 61, and the total outlay on this river, including the cost of a boom at the mouth, may amount to \$15,000.

STAFF EMPLOYED.

PERMANENTLY.

- 1 Superintendent.
 - 1 Clerk.
 - 1 Paymaster.
 - 1 Messenger.
 - 9 Deputy Slide-masters.
-
- 13 all the year round.

OCCASIONALLY.

- 3 Acting Deputy Slide-masters.
 - 5 Boom-men.
 - 2 Assistants on Slide at Chaudière.
 - 1 Foreman.
 - 17 Laborers.
-

28 from 3 to 7 months during the running season, in addition to the regular Staff.
(See Appendix E.)

ST. MAURICE WORKS.

All the works on this river have been operated with entire success throughout the past season. There has been no accident worthy of remark, nor any loss of timber, and the management appears to have given general satisfaction.

The works are now in good order and will not require a greater outlay than \$600, including provision for a storehouse at the mouth of the river, to prepare them for the active operations in spring; and, under your Excellency's authority, the superintendent has been instructed to proceed with the necessary repairs, as called for in his report, Appendix F.

An appropriation having been granted at the last session of Parliament for the purchase of land at the mouth of the river, for right of way and means of access to the public booms, and as a site for a storehouse for the safe keeping of the property connected with them, the undersigned directed one of his Engineers to lay off the land so required to be taken, and has entered into arrangements with the proprietors for the purchase of it. Some delay has been occasioned in searching for titles, but it is expected that the transfer will shortly be effected, and all further inconveniences and difficulty attending the management of the works at this point will then be removed.

The cost of repairs and management for the past year contrasts favorably with that of the previous one, as shewn by the following statement :—

	In 1862.	In 1863.
The cost of repairs - - - - -	\$ 5,641.36	\$1,511.50
Do. management - - - - -	7,321.06	6,888.40
	<u>\$12,962.42</u>	<u>\$8,399.90</u>

The staff employed consists of :

1 Superintendent	} permanently employed.
1 Messenger	
1 Slide-master	
1 Assistant do.	
3 Book-keepers.	

7 in all.

The business done upon this river remains about the same as in former years; but a fair increase may be expected henceforth.

SAGUENAY WORKS.

These works have been in successful operation throughout the past season without sustaining any injury or requiring any expenditure whatever for repairs.

The slide and dams are reported to be in good order for the business of this year.

From the representations of the person in charge, it appears to be indispensably necessary to incur a small expenditure of about \$200 for the erection of a storehouse for the protection of the Government property connected with the works, as well as to afford shelter for himself and his assistant in working the slide during bad weather.

The business done upon this river continues to increase. The property which passed these works was

	In 1862.	In 1863.
White pine logs.....	43,289	44,118
Red pine logs.....	.....	8,000
Spruce logs.....	7,000	21,000
	<u>50,289</u>	<u>73,118</u>
Square timber.....	.....	420
Red spruce knees.....	715	218

The cost of management in 1863 was \$688.40.

The staff employed consists of 1 slide-master, permanent; 1 assistant, for running season only.

ROADS IN UPPER CANADA.

The undermentioned turnpike roads, constructed in Upper Canada by this Department, and subsequently, under the authority of the Acts of Parliament, 12 Vic., cap. 5, and 13 and 14 Vic., cap. 14, transferred to certain incorporated companies, by Orders in Council in 1851 and 1852, on the conditions therein set forth, have this year been again resumed by the Government, in consequence of the failure of these companies to perform the conditions of the transfer; and the tolls since collected on them have been paid to the credit of the Receiver General.

The Hamilton and Port Dover Road, 37 miles in length, including the bridge over the Grand River at Caledonia, was resumed by Order in Council dated 18th May, 1863.

The Windsor and Seugog Road, 19 miles in length, and Whitby Harbour were resumed by Order in Council dated 19th May, 1863.

The Toronto Roads, East, West, North, and Lake Shore, altogether 73 miles in length, were resumed by Order in Council of the 4th September, 1863.

HAMILTON AND PORT DOVER ROAD.

The holders of this road not only failed in making their payments to the Government as they fell due, but so utterly neglected the necessary repairs for several years past as to allow it to go to destruction and become almost impassable, while they still continued to exact tolls. To remedy the evil, legal steps were taken by the local municipalities to compel the holders either to make the repairs or to desist from taking tolls; but, failing in this, they made formal complaints by memorial to the Government, representing the dangerous state of the road, and that persons travelling on it not only incurred great loss and inconvenience, but were, in addition, wrongfully obliged to pay toll.

A thorough examination of the condition of the road and bridges was therefore ordered to be made by an engineer of this department. This duty was performed by Mr. G. F. Baillargé in the month of August last. From his report it appears that the whole road, with the exception of four miles macadamized near Hamilton and the seven miles gravelled on top of the planking in the vicinity of Hagersville, was then in such bad order as to render it absolutely dangerous to travel on. Ten out of the twelve bridges were only prevented from falling by props underneath, and the Caledonia Bridge itself was supported in the like temporary manner.

Should these supports be carried away by the spring flood, as they are very likely to be, this important structure will become a complete wreck, and traffic will be suspended.

The estimate which he has submitted for repairing the road in the most economical manner, merely to render it passable, including the rebuilding of the Caledonia Bridge and the other bridges and culverts where indispensably necessary, amounts to \$53,172. He also estimates the probable gross revenue from tolls, on the completion of the repairs, at \$12,000 a year.

The undersigned, having received your Excellency's authority, on the 15th September last, to expend the sum of \$20,000 towards the repairing of this road where most needed to put it in such a condition that it might be disposed of on terms advantageous to the public, caused the works to be proceeded with at once.

The superintendence of the repairs was entrusted to Mr. Alexander Macdonell, an experienced contractor; and under his judicious and energetic management this important highway between the two great lakes has been so far repaired and put in order as to warrant the re-imposition of tolls, which took place on the 7th December last. The working season having soon after come to a close, the works were suspended on the 16th of December.

From his report of the progress thus made, it appears that the superintendent succeeded, in the short time allowed, and in wet and unfavorable weather, in putting the most important part of the road—that portion between Hamilton and Hagersville, 24 miles in length—in such good condition as to give general satisfaction to the public. The repairs on this portion, owing to its being very much travelled on, have been more costly than they will be on the remaining part, which is not so much used. New planks were laid on six miles; old planks relaid on two miles; and five miles have been gravelled which were formerly planked. Four bridges and four culverts have been rebuilt, and the remaining ones have undergone general repairs. The southern portion, from Hagersville to Port Dover, 13 miles, is all planked, and has been only partially repaired.

The expenditure in 1863 has been \$16,000. In addition to this there will yet be required to complete the repairs of this road in such a manner as to put it in passable order and justify the continued collection of tolls. For the general repairs of the remainder of the road, bridges, and culverts in the same manner as the rest \$14,000

For the reconstruction of the Caledonia Bridge..... 10,662

Total amount required..... \$24,662

Amount expended..... 16,000

Total expended and estimated cost of repairs \$40,662

In view of the indispensable nature of these repairs and of the fact that the tolls are remunerative, the undersigned recently obtained your Excellency's authority for the expenditure of this amount for their completion. Arrangements have accordingly been made for placing the reconstruction of the bridge under contract, and as soon as the weather will permit the other repairs will be proceeded with.

TORONTO ROADS.

These roads comprise :

- 1.—The Young street road, north, from the city limits to Holland Landing 33 miles
- 2.—The Kingston road, east, from the city limits to Rouge Hill, at the line dividing lots 32 and 33 in Pickering, including Don Bridge 17 miles

3.—The Dundas street road, west, from the city limits to Springfield,
at lot 33, in the township of Toronto - - - - - 19 miles.

4.—The Lake Shore road, south-west, from the city limits to the west
bank of the Humber River, including the bridge on that river - - - 4 miles.

In all - - - - - 73 miles.

Immediately after possession of these roads was resumed by the Government, the collector was called upon to report their condition and furnish a statement of the necessary repairs. On the 19th October last he reported that

The Young Street Road for a distance of five miles from the city was nearly worn out, and, in some places, cut through; the next five miles not quite so bad; and the remaining twenty three miles in fair condition. The repairs on this road he estimated at \$12,650.

The Kingston Road, for a distance of three miles from the city, was in very bad order; the next five miles very much worn and requiring heavy repairs; and the remaining nine miles in fair order. The Don Bridge is considered unsafe, but may be preserved for two years longer by a present outlay of \$400. The bridge at Rouge Hill also requires some repairs, and, altogether, the necessary repairs on this road are estimated at \$8,540.

The Dundas Street Road is reported to be in a ruinous state, owing to the wet and sandy nature of the soil and the absence of proper drainage. The repairs on this road are estimated at \$10,490.

The Lake Shore Road, for the first three miles, is in tolerably fair condition, but the remaining portion, which was formerly planked, is worn out, and must be made over again.

The cost of repairs and reconstruction is estimated at \$1,740.

The total estimated cost of repairs is \$33,420.

On this report, the undersigned received your Excellency's authority on the 31st October last to expend the sum of \$10,000 for the repairs of such portions of these roads as might appear most urgently to require them; but the season was then too far advanced to admit of doing them before winter set in. Authority has been given to the collector to procure stones and have them broken this winter, to be in readiness for use in the spring, and this work is now in progress.

There was no expenditure in 1863.

WINDSOR AND SCUGOG ROAD.

This road runs from Whitby Harbour on Lake Ontario to Port Perry, at the head of Lake Scugog, and is nineteen miles in length.

The repairs called for last year are not of a serious nature. Authority was given to the collector to expend \$300 on the road and a like sum on the harbour; but the accounts not having come in, no expenditure is charged to this work in 1863.

LANCASTER ROAD, U. C.

Under the appropriation of 1854, a new road of a little more than four miles in length has been made and opened in the front concession of the Township of Lancaster, County of Glengarry, between the old province-line and the village of Lancaster, as a substitute for the old road, rendered impassable for a large portion of the year by the high water in Lake St. Francis. The new road branches off from the old one about a mile and a half west of the province-line near the centre of Lot No. 11, and runs in a direct course to the centre of Lot No. 28; and then down the centre of that lot to its intersection with the old road at a point about two miles east of Lancaster Village, being about 22,100 feet in length. It has been graded, ditched, and fenced, and substantial bridges have been built over the three creeks that cross it.

All the work was performed under one contract entered into in March last. It was commenced in June, and fully completed in August for the contract sum of \$8,147. The total expenditure, including the cost of superintendence, is \$8,234. Previous to its commencement, a by-law of the Municipality of the Township of Lancaster was passed, on the 23rd February, 1863, for opening and establishing this new line as a public highway; and since its completion, and in pursuance of the provisions of the statute, it has been delivered over to the local municipality by proclamation of the 9th December last, to be maintained by that body from and after the 1st January, 1864. It is very desirable that all works of this class, after they have once been constructed and opened for the public at the expense of the Province, should in this manner be given over to, and be received by, the local municipalities through which they run, to be thereafter maintained and kept in order by the people who use them; the Government being thus relieved of all further control over them.

ROADS IN LOWER CANADA.

THE CAUGHNAWAGA ROAD.

When the sum of \$1,500 was voted by the Legislature for the repairs of the road across the Indian Reserve at Caughnawaga, the season was too far advanced to allow this Department to get the work performed by contract last fall.

All that could be accomplished, therefore, towards improving the condition of the road leading from Caughnawaga to St. Martin and to Chateauguay has been performed by day's labour, under a competent foreman. In this way the worst parts have been repaired and made passable at an outlay of \$767.51. The remainder will be completed in the ensuing spring.

TEMISCOUATA ROAD.

No work was done towards the completion and repair of this road during the past year, in consequence of the late date—the 15th October—at which the appropriation was made. The amount entered in the statement No 3 as expended in 1863 is for payment of services rendered by Joseph Hudon, Esquire, as paymaster during the construction of the road.

There still remain one and three quarters of a mile of road to be completed, and the general repairs so much needed in many places, the cost of which, as given in the annual report for 1862, will be

-	-	-	-	-	-	-	-	-	-	\$6,000.00
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Deduct the balance of appropriation on hand	-	-	-	-	-	-	-	-	-	1,237.71
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Amount required	-	-	-	-	-	-	-	-	-	\$4,762.29
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MATANE AND CAP CHATTE ROAD.

Certain portions of this road, more particularly the banks of the Ruisseau à Sem and the Ruisseau de la Vapeur, were reported by Mr. Rosa, the superintendent of the Metapedia Road, in the month of September last, to be in a dangerous state. Authority was then given him to proceed at once with such repairs as were indispensably necessary to maintain it in a safe condition. These repairs, estimated to cost \$1,000, will be defrayed out of the general appropriation of 1862 for roads in Lower Canada, of which there is a balance yet on hand available for this purpose.

These repairs were commenced too late in the season to admit of their completion last fall.

The bridge over the Grand Mechin has been secured, and the timber has been got out for the bridge over the Ruisseau à Sem, which will be about 200 feet long and 38 feet high, and, when finished, will enable travellers to avoid two dangerous hills.

The repairs which Mr. Rosa has undertaken will be completed early in the ensuing spring, within the estimate; but there will still remain about ten miles of road to be repaired and a bridge to be constructed over the Ruisseau de la Vapeur, the banks of which are steep and dangerous. The amount required for these works next summer will be about \$1,725, in addition to the \$1,000 already authorized.

The amount expended in 1863 was \$178.10.

METAPEDIA ROAD.

This important line of communication between Canada and New Brunswick, connecting the settlements on the St. Lawrence with those on the Bay of Chaleur by the most practicable passage across the great peninsula of Gaspé, is now so far completed as to be available for carrying the mails, and has been used this year by travellers to and from the Lower Provinces; but, considering its position and the purposes it was designed to serve, it is still in an imperfect condition.

The portions of it undertaken by this Department have been completed in a manner suitable for a provincial highway; but owing to the rough state of the connecting links formed by the old Kempt Road, it is as a whole imperfect, either as a military road, or even as a good common road for the use of the settlements it was intended to serve.

The old Kempt Road had been traced out and constructed as early as the year 1830, and some improvements made upon it in the years 1842, 1843, and 1844; but it was never cleared out more than fifteen feet in width, nor formed as a road, and was little better than a bridle-path, by which the mails were carried on horse-back in summer and by dog-teams in winter.

By the direct course which it took over the mountainous region which intervenes between the St. Lawrence and the Ristigouche, it necessarily presented a succession of steep hills and bad swamps wholly unsuited for the location of a provincial road or the transit of merchandize. Hence it occurred that after it had been reported by Major Robinson that the valley of the Metapedia afforded the most feasible line for the contemplated intercolonial railway, having a summit of only 763 feet above the sea, the line of the old Kempt road was abandoned, and the roads since known as the north and south Metapedia, following nearly the line of his survey, have been undertaken by this Department.

The northern division, begun in 1857, extends from St. Flavie, on the St. Lawrence, to the head of Lake Metapedia, a distance of 33½ miles

The southern division, commenced in 1859, extends from Noble's, at the forks of the Causapsal, along the Metapedia Valley, to its intersection with the Ristigouche, and thence, along the left bank of this river, to the residence of Mr. James Sillars, a distance of - 38½ "

The central division extends from the head of Lake Metapedia, along the west side of that lake to Nobles, at the mouth of the Causapsal,—a distance of 27½ miles by the old Kempt road. A new location is necessary, to avoid the hills and swamp of the old road, but the distance may be assumed to be the same - - - 27½ "

Making in all . . . 99½ miles

The old Kempt road was so badly traced in the first instance that no part of it could be made to work in with the new line chosen for the northern division; nor is it expected that any part of the central division, now forming an imperfect connection between the other two divisions will be available when an equally good class of road is to be made; while on the southern division a new line altogether has been taken, which, although more circuitous than the old line, is yet the only practicable one for the kind of road that has been constructed.

The reason for this general abandonment of the line of the old Kempt road is found in the fact that the hills encountered upon it are very numerous, and frequently present inclinations as steep as one in six, sometimes one in four, and in one case, for a distance of 300 feet, one in three; while those on the northern and southern divisions, as far as completed, have been reduced,—the former generally to one in fourteen, and in a few cases to one in ten,—the latter generally to one in twenty, and in some cases to one in fourteen.

It is easier, therefore, to change the line and avoid the hills than to undertake the reduction of them to a corresponding inclination.

The progress made on this road during the past year, under Mr. Rosa's superintendence, is as follows:

NORTHERN DIVISION.

Five miles of road completed under contracts. A truss-bridge of three spans of 50 feet each constructed over the river Metis—measuring in all 271 feet in length. Some portions of the old road repaired.

With the exception of two sections of about seven arpents each, all the work given out by contract on this division has been completed. These sections, however, only require a little more crowning of the roadway, for which a sufficient drawback has been retained to finish them in the spring.

The total length of new road now completed on this division is about 25½ miles, leaving only 7½ miles to be made through the forest and one bridge to be constructed over the river Blanche to make the connection between the St. Lawrence and lake Metapedia. The completion of these 7½ miles of road will be a great benefit to travellers, as this part of the old Kempt road, which they are now obliged to use, is very hilly and rough.

SOUTHERN DIVISION.

There have been completed under contract this year a truss-bridge over the Assemet-quagan, a bridge of round cedar-logs over the Three Islands Gulch, and 57 sections,—making in all 15½ miles of road.

There still remain to be completed 3½ sections, of an aggregate length of 8½ miles, which were placed under contract. Of these, 16 sections have been abandoned by the contractors, seven of which have since been given out to others, and the remaining nine will have to be finished next year, at an advance upon the original contract price.

This division, even in its present unfinished state, is passable throughout, and has been used this year by the mail-carriers and by all travellers in preference to the old road.

CENTRAL DIVISION.

This consists at present of the old Kempt road, on which it has been necessary to make certain repairs, in order to keep up the communication. Two bridges of round cedar

logs, put under contract last year, have been completed, those across the Metapedia and Causapscal repaired, and many parts of the road cleared of underbrush and otherwise improved.

The total expenditure this year has been \$36,449.86.

The amount required to complete this road and to pay balances due on existing contracts, according to the estimate of the superintendent in charge, is as follows :

NORTHERN DIVISION—33½ MILES.

Balance due on existing contracts - - - -	\$	70.39	
Making 7½ miles of road through the forest at \$1100 a mile - - - -		8525.00	
A bridge over Rivière Blanche - - - -		2200.00	
Repairing portion of road made in 1860-61, and completing other portions made by days-labour - -		500.00	\$11,295.39

CENTRAL DIVISION—27½ MILES.

Constructing 27½ miles of road at \$1100 a mile -	\$	27,250	
A truss-bridge over the River St. Pierre - - -		2,000	
Ditto, over the River Metapedia - - - -		3,500	\$32,750.00

SOUTHERN DIVISION—38½ MILES.

Balance due on existing contracts - - -	\$3,305.05		
Probable amount required to complete the remaining lots abandoned by the original contractors - -	816.00		
A bridge over the River Causapscal - - - -	3000.00		
Making hand-railing, culverts; widening and repairing road made in 1858-9-60-61- - -	6,000.00	13,121.05	
Total amount required to complete, including superintendence and contingencies - - - -		\$57,166.44	

The excess of this over the former estimates submitted by this Department in its previous annual reports is accounted for as follows :—

First—As regards the works undertaken on the northern and southern divisions, a better class of road has been constructed since the time when it was considered expedient to render it available as a military road, for which purpose it has been made wider, with easier grades and stronger bridges than contemplated by the first specification.

Secondly.—As regards the central, and certain unfinished portions of the northern, division, it was originally intended to make use of the old Kempt road, without change of line; but the superintendent has now provided in his estimate for making a new road on these portions also, on the same scale as the rest, but on an entirely new location, so as to avoid the hills which render the old line incapable of improvement if the same specification is to rule.

Upon the inexpediency of attempting the amelioration of the old road and making use of it to complete the connection, the undersigned submits the special report of the superintendent, given in Appendix G.

From this report it appears that, owing to its unfavorable location, the old road is impracticable as a military road, from the fact that many of the hills on it are very steep, having some inclinations of one in four, and the others ranging generally from one in six to one in eight; while to clear it out to the proper width, build the bridges, and make such improvements as it admits of would cost \$17,262, which is more than half the estimate for the better class of road; and still, with all this expenditure, it would be inferior to the other divisions, and the money spent on it would be wasted.

GASPÉ ROADS

No work has been performed on any of these roads by this Department during the past year. The sum of \$219 15, taken out of the general appropriation of 1862 for roads in Lower Canada, was paid to one of the contractors, being the balance due him for work performed in 1862.

NORTH SHORE ROADS

As no money was voted for any of these roads last year, the works were not resumed, and there has been no expenditure, except \$21 for a survey on the Escoumains road, which was paid for out of the same appropriation as above.

PROVINCIAL STEAMERS.

These vessels are four in number. Three of them, the "*Queen Victoria*," "*Napoleon III*," and "*Lady Head*," are iron screw-steamers, and the other, the "*Advance*," is a wooden side-paddle steamer.

They have all, with one exception, been employed during the past year in the same service as before, that is to say, in visiting and delivering supplies to the Light-houses and depots on the River and Gulf of St. Lawrence, and attending to the buoys and beacons under the charge of the Trinity House of Quebec; in the annual examinations of the channels by officers of the Trinity House and apprenticed pilots, as required by the Statute; in the Postal Service to the lower ports; in towing for the trade, and relieving vessels in distress. But the use of any of these steamers for the protection of the Fisheries was superseded by the employment of the Provincial schooner "*La Canadienne*." This vessel, which was wrecked in 1861 at Point Caribou, on the North Shore, was brought back to Quebec, and repaired and refitted by this Department in time to perform the service for the fisheries in 1863.

The particular service rendered by each of these steamers is as follows:—The "*Lady Head*," carrying the mails, passengers, and freight to Pictou, Nova Scotia, and the inter-

mediate ports in Canada and New Brunswick, commenced her first trip on the 6th May, and continued regularly in the service until she broke her shaft on her eighth trip, while on her way to Pictou, thirty miles below Shediac. She was brought back to Quebec by the "*Napoleon*," and there laid up for the remainder of the season. A new shaft and screw were fitted in this vessel in time to permit her to go into winter quarters on the 30th November, in the floating-dock at Palais Harbor.

The "*Victoria*," after going into Gilmour's dock to receive a new screw, a spare one being on hand, was made ready for service on the 19th May. On the 12th June, she was sent to Pictou in the service of the military authorities with a detachment of Her Majesty's troops, and, on the 25th of the same month, was despatched to the assistance of the shipwrecked passengers and crew of the Canadian Royal Mail steamer "*Norwegian*," lost on St. Paul's island. On the 8th September she took the place of the "*Lady Head*," and performed the postal service to the lower ports for the remainder of the season. The whole number of trips made in 1863, notwithstanding the break-down of the "*Lady Head*," was fourteen, the same as in preceding years.

The "*Napoleon III*" was ready at her wharf on the 5th May for towing vessels for the trade. She left early in June, in the service of the Trinity House, for the light-houses and depots along the river and Gulf, down to the Straits of Belleisle, taking with her several passengers for the salmon fisheries on the Rivers Godbout, Moisie, and Mingan, returning to Quebec on the 12th July. She remained from that time until the 4th August in the service of the trade, when she was again despatched on the Trinity House service, to visit and provision the light-houses on the St. Lawrence between Quebec and Father Point. On the 14th September she started on her third trip in connection with that service, taking down the autumn supplies to the light-houses and depots on the river and gulf. She returned on the 3rd October, and remained from that time at the disposal of the trade, towing vessels, until the 19th November, when she was sent to convey to Anticosti the light-house keeper appointed in place of Mr. Ballantine, deceased, and to bring back the family of the latter. She was placed in winter-quarters in Blais' booms on the 30th November.

The "*Advance*."—It was considered necessary to make very extensive repairs to the hull of this vessel, and to procure her a new boiler, causing an expenditure of \$12,132.93, which is charged to the service of the Provincial steamers. These repairs were completed by the 6th August, when this vessel was placed at the service of the Trinity House, and made during that month the customary annual trip to the pilot ground in the lower part of the river, with the officers of the Trinity House and the apprenticed pilots, for the examination of the channels, as required by law. After having towed some vessels for the trade, she was employed at the close of the navigation in taking up the buoys in the upper and lower parts of the river, and in bringing up the floating light-ship from the Traverse; and, finally, on the 1st December, went into winter-quarters at Blais' booms.

In the Appendix A, No. 4, the expenditure charged to the Provincial steamers for 1863 is stated to be \$42,898.08; but in this sum are included the extraordinary repairs to the "*Advance*" and "*La Canadienne*;" the former amounting almost to reconstruction, and the latter being properly chargeable against the service of the fisheries. Deducting these heavy items, it will be observed that the services rendered by these vessels have actually cost less in 1863 than in any former year. The position of this account will be better

understood by reference to the statement of it given in Appendix K, according to which	
the amount expended for outfit, fuel, running-expenses and repairs was - \$59,365.39	
and the amount of revenue therefrom, in 1863, paid to the Receiver	
General was	35,631.87
<hr/>	
leaving as the net cost of these services	\$23,733.52
<hr/>	

Although this presents a favorable view of last year's management, it is still desirable to discontinue the running of vessels on Government account for the benefit of the navigation, so soon as the trade can safely be left to take care of itself.

The authority of your Excellency having been obtained on the 13th October last to sell the "*Queen Victoria*" and "*Napoleon III.*," public notice was given, inviting tenders for them up to the 23rd November last. Upon this notice eighteen tenders were received, but as they were all either too low or unsatisfactory as regards the mode of payment proposed, none could be accepted; and another notice has been issued, again inviting tenders, and fixing the 1st March next as the time for receiving them.

HARBOURS OF REFUGE

CHANTRY ISLAND—LAKE HURON.

The Breakwater Pier at Chantry Island, off the port of Southampton, was constructed by this department in 1858, at a cost of \$29,208, and, in connection with the light house on that island, is of great advantage to the general trade of this lake, as well as to that of this port in particular.

It extends from the north-east end of the island in a direction towards the main land, and under its lee vessels find shelter and good anchorage; but, from a desire to run it out as far as possible with the funds appropriated, it was not raised sufficiently high in the first instance to prevent the sea breaking over it and doing injury to the works.

The pier was examined by the chief engineer in the month of July last, and was found to be considerably damaged by the action of the waves and of ice. The covering planks were loose and liable to be torn off; a part of the island had been washed away some years previously, and there was then an opening of 120 feet between it and the end of the pier.

On his report and recommendation, such repairs as were indispensable for the safety and preservation of the works were proceeded with, and completed by contract last autumn, at a cost of \$442 50, and charged to the appropriation of last year.

Under the authority of the same appropriation, the other works for raising the pier and connecting it with the island will be put under contract in the ensuing spring.

LANDING PIERS BELOW QUEBEC.

RIMOUSKI PIER.

The works designed for the protection of this pier and placed under control in October, 1862, and on which some progress was made in that year, were resumed last spring by the contractor, and completed by the end of the season.

They consist of an additional width of 15 feet of crib work, extending for a distance of 255 feet from the outer end of the pier along its eastern face, and the levelling-up of the sunken portion of the old pier to one uniform height.

The expenditure in 1863, including the cost of superintendence, was \$5,161 77, which amount has been charged to the appropriation, 24 Vic, cap. 1, for repairs of existing works.

PIER AT L'ISLET

The repairs begun at this pier in 1862, being such as were essential to the protection of this important work, were completed last year at a cost of \$486.97, which sum has been charged to the same appropriation as above.

In regard to these piers generally, it is highly important that some measures should soon be adopted for their future care and maintenance. The seven landing-piers were constructed between nine and ten years since, at an outlay of \$788,971.02 for construction, and \$21,013 54 for repairs up to the present time.

From natural decay and exposure to the grinding effects of the ice, they are all beginning, as might be expected, to demand an annual outlay for repairs. Hitherto, these repairs have been borne by the Government without receiving in return any revenue from the works, which are of so much importance to the coasting trade as well as to the parishes for whose benefit they were constructed. If they are to remain as a permanent charge on the Government, it is necessary that a person should be appointed at each pier to take care of it and keep it in repair; that regulations should be adopted for the proper using of them; and that tolls should be levied on all vessels touching, and on all property landed or shipped at those piers: the tolls to be regulated so as to be sufficient to pay the cost of management and repairs, and thus preserve this valuable property from deterioration, and maintain it for the benefit of the trade on the lower St. Lawrence.

With a view of ascertaining their present condition, a survey of all these piers was made last summer by one of the Engineers of this Department, from which it appears that, in addition to the sums already spent, a farther outlay will be required on each, to put them in good order, as follows:—

Eboulements, north shore	• • • • •	\$345.50
Malbaie, north shore	• • • • •	281 03
Berthier, south shore	• • • • •	403 20
L'Islet do	• • • • •	583.05

Rivière Ouelle	do	-	-	-	-	-	-	-	-	151.66
Rivière du Loup	do	-	-	-	-	-	-	-	-	572.24
Rimouski	do	-	-	-	-	-	-	-	-	674.12

Total estimated cost of repairs - - - - \$3,010.80

The repairs called for consist chiefly of replacing iron straps, fenders, sheeting, and planking torn from the sides and ends of the piers and slips by the action of the ice and of vessels made fast to them. In all other respects, the engineer reports the piers to be generally in good order, and remarks that "their present condition shows that nothing has been expended on them hitherto but what was essential to render them substantial and durable, and that the work formerly done has been well done in its most important parts." His report on the state of these piers, omitting the details of the estimates, is given in appendix L.

OFFICIAL ARBITRATORS.

It became necessary to refer five new claims to the Official Arbitrators last year. Three cases were still pending from the previous year. To investigate into these eight claims, the Arbitrators held three meetings in Quebec and two in Montreal, the proceedings before them having occupied forty-five days.

On the claims submitted, four awards were made, amounting in all to \$6,027.80; one claim was withdrawn, and three are still pending. For the particulars in relation to these claims see the detailed statement, Appendix I, furnished by the Secretary.

Two of the awards made by the Arbitrators—one in 1861, and the other in 1862—were appealed from; but both were confirmed by the judgment of the Superior Court.

The amount paid in awards in 1863, including some made in former years, was.....	\$10,972.67
The pay and expenses of the Arbitrators and Secretary, printing, stationery, and office expenses amount to	4,991.53
Law costs, witnesses, &c.,	3,882.23
Total, agreeing with statement No. 4,	<hr/> \$19,846.43

Of the public buildings throughout the Province, it is only necessary to state generally that there was expended on the Marine Hospital at Quebec the sum of \$1,641.32 for internal repairs, plastering, and painting, and for repairing the roof. On the Court House at Quebec, \$120 for repairing the boundary wall. On the Court House at Montreal, \$525 for insurance, and \$21.29 for putting up a stove in the Registrar's Office; and on the Post Office at London, \$358 for internal fittings.

Another plan, conformable to the present conditions, is now in course of preparation, and, so far as possible, the erection of suitable buildings for the amount appropriated.

NEW DISTRICT COURT HOUSES AND JAILS, L.C.

There has been paid out, during the past year, the sum of \$861.20, for various incidental expenses connected with these buildings, including balances due on contracts and some minor works required for their completion or repair.

At the Court-house at Malbaie, it was found necessary to construct a retaining-wharf, for the protection of the building, and to fence in the grounds. For these purposes the expenditure of \$1140 was sanctioned by Your Excellency on the 6th October last, and the works are now in progress.

ADDITIONAL WORKS REQUIRED.

The thirteen Court-houses and Jails which were erected by this Department for the judicial districts in Lower Canada, under the authority of the Act 20 Vic. cap. 14, and duly handed over to the local authorities in the years 1861 and 1862, have since been examined officially by the Prison Inspectors; and in their reports they recommend the following additional works as indispensably necessary at every place.

The enclosure of the jail-yard, for the use and safe keeping of the prisoners, by a high stone wall. (This was referred to and recommended in the last annual report, but no provision has yet been made for it.)

The erection of porches at the entrance-doors, wood-sheds, and outside privies.

The cost of these several works for each district is estimated at \$1,718, and for the thirteen districts the total outlay required to carry out the recommendations of the Inspectors will be \$22,334

NEW JAIL, QUEBEC.

This building, which, according to the contract, should have been fully completed by the 1st November, 1862, is still in an unfinished state.

The works were resumed at the beginning of the last season by the contractors' securities, and have since been prosecuted by them in a satisfactory manner. Although they were obliged to take down and rebuild a large portion of the outer walls and of interior brick work which had been damaged by exposure to the winter frosts and rains, they have completed the masonry and brick work, got the building roofed in and enclosed, and performed a large share of the interior finishing. The works were suspended on the 1st January last, but will be resumed shortly. With proper exertion they can be completed by the 1st June next.

As the building was not covered in until late last autumn, the brick vaulting of the cells and corridors became saturated by the fall rains; and for the protection of the building during winter, it was necessary that this brick work should not be allowed to freeze. To guard against this, the contractors were called upon to heat the building during the winter, as obliged by the contract; but, having refused to do so, this expense has, for the present, to be borne by this Department. It is estimated to cost \$1,000, in addition to \$578 paid for stoves and pipes, which, under any circumstances, would have to be provided, to heat the building when finished.

Mr. P. Gauvreau, of this Department, who has, since May last, succeeded to Mr. Banlarge in the superintendence of this work, has furnished a report on the present position of the contract and additional works, from which the following statement is derived :

1.—Works authorized and in progress :—

Amount of contract	- - - - -	\$64,000 00
Substitution of stone lining for brick inside of building, and for door jambs to cells	- - - - -	13,184.00
For adding a fourth story to central part	- - - - -	7,500.00
Substituting cement for common lime in arches of brick work	- - - - -	760.00
For making loop-holes in cornice	- - - - -	1,000.00
Extra work recognized by architect	- - - - -	1,292.44
Substitution of tin for slate in the covering of the roof	- - - - -	850.00
Total when completed		\$88,586.44
Amount paid to the contractors	- - - - -	77,657 96
Balance due on completion		\$10,928.48

The estimated cost of the works remaining to be done, to complete the building at the contract schedule rate, is \$5,428.

2.—Amount expended :—

Paid to the contractors	- - - - -	\$77,657.96
Paid for plans, superintendence, and contingencies	- - - - -	8,909.97
Total	- - - - -	\$86,567.93

3.—Additional works required.

It will be necessary to have the water laid on from the city water-works for the service of this prison, the cost of which is estimated at \$1,000. The lighting of it, either with gas or coal oil, has also engaged the attention of this Department, but no decision on this subject has yet been arrived at.

To meet the requirements of the Board of Prison Inspectors, and enable them to carry out their views in reference to prison discipline, it will be necessary, before this jail can be used, that it should be enclosed by a high stone wall, and that this enclosure should be divided off into separate yards for males and females.

About twenty acres of the Bonner property have been reserved for the use of this prison, to afford space for carrying on the various mechanical trades in which the prisoners may be usefully employed. This reserve will have to be enclosed by a rubble stone wall, and a road made and maintained all around it; but this is not immediately necessary. It will be sufficient for present purposes to provide for the interior walls, enclosing a space of about 4 acres, including the jail as now built and the projected extension of the southern and western wings. This wall, 18 feet in height, is estimated to cost \$10,400. Its immediate construction is necessary, to afford the means of putting in operation this year the system of management and classification recommended by the Inspectors.

If this were done, it would seem quite practicable, with a properly organized system of prison labor, to perform all the works remaining to complete the jail and its enclosure according to the original design, and thus provide, at the least possible expense, double the amount of accommodation afforded by the building as it now stands.

The works which might be accomplished in this manner by prison labor, and which might be prosecuted from year to year at a moderate outlay, consist of those referred to in this and former reports, which have been estimated to cost, if performed by contract, as follows:—

The extension of the southern wing,	\$20,000
The extension of the western wing,	50,000
The construction of the external boundary walls and of the road around it,	18,800
<hr/>	
Total, if done by contract,	\$88,800

It may be remarked that all the rubble-stone required for these works can be quarried on the spot, by the prisoners themselves, within the limits of the reserve set apart for the use of this prison.

KAMOURASKA JAIL.

Under the authority of the appropriation by the Legislature in its last session of \$8,000, for repairing this building, which was partially destroyed by fire in December, 1862, the works required for its restoration were put under contract on the 1st December last, and are now in progress. It is expected that they will be completed by the 1st May next, as required by the contract.

IMMIGRATION SERVICE.

On the recommendation of the Honorable the Minister of Agriculture, approved by Your Excellency, on the 12th March last, a shed has been erected on the wharf at the old Custom-house, for the use of immigrants arriving in this city, in place of the one at the India wharf, which had been given up; and on the further recommendation of the Parliamentary Committee on Immigration and Colonization, with the same approval, a landing slip has been constructed, and the wharf repaired and enclosed by a hand-railing as a security against accident. Offices have been fitted up for the Immigrant Agent, in the old Custom-house, and water laid on for the use of immigrants. The cost of these improvements was \$2,247.45.

There has also been expended the further sum of \$1,032.50 for the general repairs of the wharf and buildings at the Grosse Isle station; making the whole outlay on this service \$3,279.95, as entered in Statement No. 4 of Appendix A.

PUBLIC BUILDINGS, OTTAWA.

The report of the commission of enquiry into matters connected with these Buildings, having been submitted in the latter end of January, 1863; authority of council was shortly afterwards granted for the resumption of the works upon the basis therein recommended.

As the original contractors had delivered and prepared a large quantity of materials and were fully provided with the necessary plant before the suspension of the works in 1861, it was deemed advisable to offer them the completion of the buildings, upon the terms set forth in the report above referred to.

This offer having been accepted by them; (after certain preliminary arrangements were made) contracts in accordance therewith were entered into on the 18th April, 1863. Early in the following month, work commenced on all the Buildings, and was vigorously proceeded with until the winter set in, when it became necessary to confine operations to the interior, and to the preparation of materials for next season's use. This is now being expeditiously proceeded with.

The progress made during the past year is strikingly manifested by the present imposing appearance of the Buildings; and an idea of what will be their ultimate architectural effect has been largely developed.

They form three sides of a quadrangle, containing an area of nearly ten acres; and are situated upon a rocky point rising about 160 feet above the level of the Ottawa, which flows at its base.

This elevation commands an uninterrupted view of the river, the city and the surrounding country; thus enhancing the suitableness of the site, which is, in other respects, an advantageous one.

Entering the square from Wellington Street (its southern boundary), the east and west sides are flanked by the Departmental Blocks; and the north side is formed by the principal front of the Parliament Buildings.

Even in the present unfinished state of the works, it will be seen that the Quadrangle faces of the Blocks are sufficiently diversified in outline to avoid the monotony which such an extent of similar style might be supposed to entail; whilst the more regular horizontal lines, and the grand central tower of the Parliament Building, form a pleasing contrast to all the rest; producing a combined effect of grandeur and harmony which, it is believed, cannot be surpassed by any other Public Buildings upon this Continent.

The main roofs of the Departmental Blocks are completed and slated throughout. The roof of the principal front of the Parliament Buildings is also put on, and that part of it west of the main tower slated.

The roofs of the Legislative chambers and Library have not yet been commenced. The latter portion of the building remaining nearly as it was when the works were suspended.

The towers of the Departmental Blocks have generally been carried above the level of the roofs, and then temporarily covered in, it having been decided to direct all efforts, after the resumption of the works to prepare them for occupation at as early a date as possible ; for which purpose the completion of the towers was, of course, not of pressing necessity.

In the Parliament Buildings, the front angle towers are carried up full height ; and the western ones roofed : whilst the central tower stands a considerable height above the main cornice. The Speaker's towers have also been carried up and covered in.

The windows are in place, and glazed ; and it will thus be seen that the exterior fronts of the Buildings present a finished appearance, with the exception of the portions above-named.

The principal works which have been proceeded with on the *Parliament Buildings*, in addition to those above-mentioned, are as follows, viz :—

The *Basements* have been prepared for the floors : the air-ducts covered with flagging the hot-air and steam-vaults completed, and the ceilings, &c., made ready for plastering.

The division walls in the outer portion of the *Library* have been carried up to the height of the basement : and the iron joists and concrete floors laid over them

The *Boiler-house* has been paved ; and the ducts covered with flagging—the division walls and arches under the fuel tram-way, and the side walls above it have been carried up full height—the necessary iron joists and concrete laid—and the building roofed—stairs constructed, and the side walls carried up to receive the roof of the main building.

Ground floor. The iron joists and concrete floors have been laid in the corridor, marble pillars placed and arches constructed in members' lobbies—interior side and end walls of both chambers carried up—marble pilasters placed, and cornice laid around galleries ; and walls of legislative chamber carried up to height of roof.

First floor. All the interior walls have been carried up to full height : and the iron joists and concrete floors laid throughout. The interior walls are carried up, and the cornice laid on the flanks and rear of the buildings. About 20 of the chimney-tops are completed, and the others carried up above the roof.

During the season, about 4200 cubic yards of masonry was built—nearly three millions of bricks laid—about 2500 cubic yards of concrete laid—upwards of 165 tons of iron floor joists placed—and over 30 tons of lead used on the flats of the roofs and for other purposes.

On the *Departmental Buildings*, progress has been made on the following works in addition to those referred to above, viz :

Levelling up and laying concrete floors. Paving boiler-house and fuel rooms—completing air and steam-vaults—covering ducts and carrying up division walls. Laying concrete floors in the first and part of the second stories—plastering and finishing the basements and part of the first stories.

During the season about 4500 cubic yards of masonry was built, fully one million of bricks laid, and over 2760 cubic yards of concrete.

Considerable inconvenience has been experienced by the non-arrival of the iron joists from England for part of the upper floors and ceilings of these buildings, and for the boiler-houses. Steps have, however, been taken to ensure their delivery early next spring.

The various works connected with the system of heating and ventilation have also been carried on as expeditiously as circumstances would permit.

The amount paid during the past year has been as follows, viz :—

Paid to contractor Parliament Buildings	-	-	-	-	\$120,725 88
Do do Departmental Buildings	-	-	-	-	101,800 03
Do do for heating and ventilation	-	-	-	-	5,563 81
Superintendence and contingencies	-	-	-	-	20,257 96
Total					<u>\$248,347 68</u>

All of which is respectfully submitted.

M. LAFRAMBOISE,
Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS,
Quebec, 18th February, 1864.

APPENDIX TO THE REPORT

OF THE

COMMISSIONER OF PUBLIC WORKS,

FOR THE YEAR 1863.

APPENDIX A.

No. 1.

STATEMENT of the several Works under the charge of this Department which are in use and yield revenue, shewing, under different heads, the expenditure on construction and the amount paid for land damages during the year 1863, the total cost of construction under this Department to the 1st January, 1864, and the cost of repairs and management during the year 1863.

NAME OF WORK.	Expenditure on construction during the year 1863.	Amount paid for damages in 1863.	Total expenditure on construction to 1st Jan'y, 1864.	Cost of repairs and management for 1863.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Welland Canal	46810 00	181 12	4766460 70	56248 00
<i>St Lawrence Canals, viz:</i>				
Lachine.....	10414 98	.....	2116902 58	20999 24
Beauharnois .....	.....	5143 00	1597403 81	14970 64
Cornwall.....	462 87	.....	467150 70	12179 85
Williamsburg.....	.....	.....	1089739 93	9864 56
Junction .....	.....	.....	230796 11	.....
New Lock Gates.....	16965 00	.....	39830 22	.....
General expenditure.....	107 25	.....	74835 20	.....
Chambly Canal.....	.....	367 75	69774 51	14453 12
St. Ours Lock .....	.....	.....	123137 65	3219 40
Ste. Anne's Lock .....	.....	.....	114596 49	543 34
Burlington Bay Canal.....	.....	.....	291044 49	.....
<i>Slides, Dams, &c.</i>				
Ottawa.....	8850 00	520 00	699181 51	15786 96
St. Maurice .....	.....	.....	257880 48	8399 90
Trent securing dams.....	.....	.....	2380 34	200 00
Saguenay	3450 67	.....	44470 41	688 40
Port Stanley Harbor	1154 40	.....	230531 88	.....
Union Suspension Bridge, reconstruction .....	.....	.....	5266 60	.....
Total.....	88215 17	6211 87	12,221,383 61	157552 90

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

No. 2.

STATEMENT of Public Works under the charge of this Department, incomplete and, as yet, unproductive, but on which tolls are to be levied as soon as they are available; shewing the expenditure thereon in 1863, on construction, the total expenditure on construction up to the 1st January, 1864, and the cost of repairs and management during the year 1863.

NAME OF WORKS.	Expenditure on Construction in 1863.	Total expenditure on construction to 1st Jan'y, 1864.	Cost of repairs and management for 1863.
	\$ cts.	\$ cts.	\$ cts.
Chats Canal.....	.....	373191 98	.....
Seugog Inland Navigation.....	4362 88	484123 61	556 50
	4362 88	857315 59	556 50

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

No. 4.

STATEMENT of expenditure on certain Miscellaneous Services under this Department, during the year 1863.

	\$	cts.
Provincial Steamers.....	42898	08
Advertising Sale of Provincial Steamers.....	94	94
Tug Service, Upper St. Lawrence.....	16000	00
Do do advertising Tenders for 1864.....	489	31
Surveys generally.....	1558	89
Arbitrations, Awards, &c.....	19989	43
Visit of H.R.H. the Prince of Wales.....	412	25
Contingencies of Department.....	60	00
Do do for Engineering Branch.....	3652	88
Advertising Hydraulic Lots, Rideau Canal.....	337	23
Militia Expenses	586	44
Survey, Three Rivers and Arthabaska Railroad... ..	317	65
Emigration Service	3278	95
	89657	05
<i>Less :</i>		
Included in No. 1 Statement, and also under the head of Arbitrations.....	9662	54
	79994	51

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

No. 5.

STATEMENT of the expenditure incurred under this Department for the repairs and management of the Ordnance Canals, for the year 1863.

NAME.	Extraordinary Repairs.	Ordinary Repairs and Management.	Total Expenditure.
	\$ cts.	\$ cts.	\$ cts.
Rideau Canal	1805 22	23168 30	24973 52
Do Survey			600 00
Do Repairs at Hogsback.....	26 91		26 91
Carillon and Grenville Canal.....		9040 78	9040 78
Lock Gates for Carillon and Grenville Canal.....			3085 06
			37726 27

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

No. 6.

A DETAILED Statement of the expenditure incurred in repairs and maintenance of Provincial Light Houses, for the year 1863, under this Department.

Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
		\$ cts.	\$ cts.	\$ cts.
Machine Pier.....	John Norton.....	385 25	161 84	547 09
Light Ship No. 1.....	Pierre Laodré.....	250 00	141 22	391 22
Do No. 2.....	Benjamin Picard.....	250 00	138 17	388 17
Do No. 3.....	Joseph Meloche.....	225 00	176 20	401 20
Beauharnois.....	Peter Shannon.....	435 00	155 60	590 60
Grosse Pointe.....	A. McDonald.....	175 00	160 05	335 05
Machine's Point.....	E. S. Johnson.....	435 00	140 00	575 00
Cherry Island.....	G. H. Johnson.....	250 00	533 48	783 48
Do Light Ship.....	Thomas Hill.....	335 00	479 08	814 08
Lancaster Pier.....	Richard Elliott.....	140 00	120 40	260 40
Cote Shoal.....	Joseph Austin.....	120 00	135 40	255 40
Grenadier Island.....	J. Wallace.....	140 00	128 50	268 50
Lindos Island.....	James McDonald.....	200 00	420 40	620 40
Mananque Narrows.....				
Jack Straw Shoals.....				
Spectacle Shoal.....	Daniel Bryant.....	346 15	195 00	541 15
Red Horse Rock.....	James Ward.....	219 94		
Burnt Island.....	Joseph Mervin.....	120 00	184 16	304 16
Wolfe Island.....	Thomas Kilty.....	225 00	140 90	365 90
	Robert Gillespie.....	250 00		
Snake Island.....	L. Herchmer.....	435 00	155 80	590 80
Nine Mile Point.....	John Dunlop.....	435 00	401 70	836 70
Faire Ducks.....	Joseph Swetman.....	177 50	430 60	608 10
	Frederic Swetman.....	326 25		
Point Peter.....	W. A. Palin.....	435 00	400 40	835 40
Scotch Bonnet.....	Samuel Wilson.....	435 00	320 60	755 60
Presqu'Isle.....	Wm Swetman, Sr.....	325 00	410 40	735 40
Do Range Light.....	Wm Swetman, Jr.....	187 50	180 50	368 00
	James Cummins.....	62 50		
Gull Island.....	George Roddick.....	435 00	415 40	850 40
	Robert Roddick.....	50 00		
Gibraltar Point.....	George Durnan.....	485 00	505 40	990 40
Burlington Bay.....	George Thompson.....	300 00	125 40	425 40
Port Dalhousie.....	Jonathan Woodall.....	450 00	265 50	715 50
Port Colborne.....	James Fortier.....	400 00	241 20	641 20
Mohawk Island.....	John Burgess.....	435 00	300 00	735 00
Port Maitland.....	Peter Baikie.....	435 00	190 60	625 60
Port Dover.....	Wm. Carlisle.....		82 50	82 50
Long Point.....	H. H. Clarke.....	545 75	420 50	966 25
Port Burwell.....	Alexander Sutherland.....	320 00	165 80	485 80
Port Stanley.....	Richard Ead.....	144 00	120 80	264 80
Pointe Pelée.....	P. McIntyre.....	435 00	1020 60	1780 60
	Wm. Wadsworth.....	189 29		
	James Edwards.....	135 71		
Pelée Island.....	James Cummins.....	217 50	481 40	698 90
	Wm Swetman, Jr.....	217 50		
Bois Blanc.....	James Hackett.....	435 00	255 40	690 40
River Thames.....	Thomas Cartier.....	435 00	225 06	660 06
Quoddy.....	Humphrey Fidler.....	325 00	225 34	550 34
Point Clark.....	John Young.....	435 00	391 22	826 22
Chantry Island.....	D. McG. Lambert.....	435 00	394 26	829 26
	Wm. McG. Lambert.....	50 00		
Isle of Coves.....	D. McBeth.....	435 00	380 40	815 40
	Wm. McBeath.....	300 00		
Griffiths Island.....	Vesey C. Hill.....	435 00	310 41	745 41
Nottawaragn Island.....	George Collins.....	435 00	205 40	640 40
Christian Island.....	Wm. Hoare.....	435 00	227 78	662 78
Green Shoal.....	D. Thomas.....	250 00	85 50	335 50
Carried over.....		10897 84	12750 86	23648 00

No. 6.—A DETAILED Statement of the expenditure incurred in repairs and maintenance of Provincial Light Houses, &c.—*Continued.*

Name of Light.	Name of Keeper.	Amount of Salary paid.	Supplies and Repairs.	Total.
		\$ cts.	\$ cts.	\$ cts.
Brought forward.....		16827 84	12756 25	29584 09
Pointe Claire No. 1.....	Arsène Glode	250 00	95 68	345 68
Do No. 2.....	Samuel Biron	250 00	82 60	332 60
		17327 84	12934 53	30262 37
Management, salary of Superintendent and his travelling expenses, freight and charter of Steamers delivering supplies, advertising, &c.				4783 48
Placing buoys and light ships.....				304 87
Supplies on hand in store.....				650 00
				36000 72

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

No. 7.

STATEMENT shewing the total amount expended under the Department of Public Works during the year 1863, as detailed in the foregoing Statements, numbered 1, 2, 3, 4, 5 and 6.

STATEMENT.	Repairs and Management.	Construction.	Miscellaneous.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
No. 1.....	157552 90	94427 04	.....	251979 94
2.....	556 50	4362 88	.....	4919 38
3.....	69452 40	341000 09	.....	410452 49
4.....	.....	.....	79994 51	79994 51
5.....	34641 21	3085 06	.....	37726 27
6.....	36000 72	.....	.....	36000 72
Total	298203 73	442875 07	79994 51	821073 31

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

APPENDIX B.

WELLAND CANAL OFFICE,
ST. CATHERINES, December 19th, 1868.

SIR,—I have the honor to submit my annual report on the works under my charge, in compliance with your letter to that effect to me, No. 47,922, of the 4th instant.

It having been announced that the canal would be open on the 13th April, it was found necessary, owing to the firm state of the ice, to break a channel by means of an ice breaker, in order to allow vessels to pass through on that day, which must otherwise have been detained some days.

There have been three interruptions in the navigation this year, causing a delay of about four days. The first occurred on the 8th July, by the steamer "Bristol" breaking a gate at lock No. 21; on the 16th September, the four gates at lock No. 23 were carried away by the propeller "Vermont," and on the 14th November, one of the upper gates of lock No. 2 was destroyed by the schooner "Selkirk." The cost of making these repairs was promptly paid. The navigation has otherwise been efficiently maintained throughout the season.

The canal was closed by frost on the 10th December. The weather subsequently moderating, a channel was opened on the 12th, by means of the ice-breaker, to pass a steamer through, which had been detained from reaching the canal by adverse weather. It may be considered as closed on the 13th December, on which day the last boat passed through, making 244 days of navigation for the season, inclusive of interruption.

REPAIRS AND MANAGEMENT.

The repairs of the sill of the lock at Port Robinson were attended with considerable trouble, in consequence of great leakage; but this was finally overcome, and the repairs properly effected.

The repairs authorized upon the other works of the canal, so far as practicable, were completed before the opening of navigation. During the season, the principal attention has been in the maintenance of the works and repairs of casualties.

The stanching at the Dunnville dam, alluded to in my last report, has been fully tested this year, and the result is highly satisfactory; with more than ordinary drought, the level of the canal has been much better maintained than hitherto.

WORK OF CONSTRUCTION.

This work comprises the enlargement of the canal above Allanburgh, and consists of the deepening and widening of it, to admit the water of Lake Erie at the summit level. The progress made is much more satisfactory than hitherto. At the same rate, this work may be completed in two years. There will be required an appropriation of \$60,000 for carrying it on another year.

The necessity for the formation of a second towing-path upon the Thorold level, between Hurst's and Mariatt's bridges, fully justifies my again submitting it for your favorable consideration. Its estimated cost is \$18,100.

Repeated complaints have been made by millers, seamen, and others, of the insufficiency of water in the channel leading from the lock at Port Robinson to the River

Welland. This channel has but seven feet depth at ordinary water level, but when the water is low there is scarcely six feet. This depth does not admit of boats passing with a full load. The probable cost of sinking the channel to a sufficient depth, say eight feet at low water, will be about \$2,500. This sum appears a small outlay, compared with the benefits which will be derived therefrom, as a large trade is carried on through it.

The enlargement of the harbor accommodation at Port Colborne is much called for. Large fleets of vessels are frequently detained in the harbor by head-winds, and as these winds are favorable for those vessels making the canal and the southern terminus of the Welland Railway, the overcrowding of the harbor is such that much delay and considerable damage frequently ensue. In the estimate a sum of \$64,000 is submitted for enlarging it and the pier work on its south-east side.

I herewith submit *Schedules* No. 1 to 7 (inclusive), shewing the various expenditures upon this work, the collections of the revenue for rents, land sold, &c., &c.;—and an approximate cost of maintenance another year.

Schedules Nos 1 and 2 shew the estimated cost of the proposed works of construction, with the several appropriations made by the Legislature, and the expenditures thereon to 1st December, 1863 (*not printed*).

Schedule No. 3 gives the cost of the management and repairs of the canal this year. These expenditures are defrayed from the canal revenue.

The cost of management is	\$40,855.98
Do do repairs	15,392.02
Total	\$56,248.00

The total cost for the management and repairs is \$5,002.22 less than last year. Of the repairs \$3 535.50 have been levied against vessels for damaging the works of the canal. *Schedule* No. 4 shews the water powers and other property leased on this canal, with the erections, &c.

The annual rent for property and water-power leased is \$9,039.10

The amount collected in 1863 is \$9,014.79

The arrears remaining due to 1st December, 1863, are..... \$5,441.74

Of the amount shewn as collected—\$8,253.17 (*not printed*)—were received by the paymaster. The residue was received by the Department, viz : \$309.12 from Odfield, and \$452.50 from Hendershot. A portion of the amount shewn as arrears cannot be enforced, from the reasons shewn in my last report (*not printed*).

Schedule No. 5 shews the land, &c., disposed of, not being required for canal purposes. Of the sales there have been paid \$516.33 this year, leaving in arrears \$28,949.58 for the sales of lands made to James R. Benson on behalf of the Welland Canal Loan Company and the municipality of the County of Welland. The lands belonging to these Corporations comprised valuable tracts, large portions of which have been disposed of by them, and from their sales there are annually falling due large amounts, no portion of which has been applied towards liquidating their debts; and as the arrears have been accumulating over a period of ten years, during which time no payments have been made, it seems as though no moneys will be collected from these sales, unless enforced.

Schedule No. 6 gives a list of the vessels, &c., upon which penalties have been enforced for committing breaches of the canal regulations. The several sums collected this year amount to \$4,664.50.

Schedule No. 7 gives an approximate estimate of the probable cost of making the ordinary canal repairs for the year 1864, amounting to \$17,500 (*not printed*).

Appended are statements shewing the revenue collected and the number of vessels through the canal for several years. There is a decrease of 905 vessels, and 165,865

tons, from last year ; but in the tonnage of each vessel there is an increase of 6 per cent, while there is a decrease in the number of 18 per cent, compared with last year. In the tolls there is an apparent decrease of a trifle over 16 per cent. in the amount collected last year. But of that collection on all shipments passing down the canal to Canadian ports, 90 per cent. was refunded. It is, therefore, quite probable that the revenue of this year will shew an increase over that of last.

I have the honor to be, sir,

Your obedient servant,
(Signed)

S. D. WOODRUFF,
Superintendent.

T. Trudeau, Esq.,
Secretary of Public Works, Quebec.

WELLAND CANAL.

TABLE of its Revenue for the last four years.

PORT OF COLLECTION.	1860.	1861.	1862.	1863.
Colborne.....	\$116,033 55	\$174,474 27	\$205,061 81	\$146,368 62
Robinson.....	3,502 78	4,775 37	6,373 06	4,852 04
Maitland.....	1,685 31	6,912 87	1,756 17	871 77
Dunnville.....	5,261 40	5,918 93	5,337 81	3,323 90
St. Catharines.....	1,259 71	1,412 10	1,527 43	1,608 05
Dalhousie.....	37,477 90	36,276 45	51,327 99	68,417 63
	\$165,220 65	\$229,769 49	\$271,384 27	\$225,442 01
Collected on rents.....	7,686 97	8,967 20	7,363 90	9,014 79
Do on lands, &c., sold.....	1,737 07	25 00	.....	516 33
Do fines and damages.....	2,116 10	2,267 80	573 00	4,664 50
	\$176,760 79	\$241,029 49	\$279,321 17	\$239,637 63

NUMBER OF SAILING VESSELS AND STEAMERS WHICH HAVE PASSED THROUGH THE CANAL DURING THE LAST TEN YEARS.

1854.....	3,690
1855.....	3,816
1856.....	3,885
1857.....	3,604
1858.....	3,726
1859.....	2,589
1860.....	3,744
1861.....	4,315
1862.....	4,899
1863.....	3,994

WELLAND CANAL.

SCHEDULE No. 3.—Detailed Schedule of the gross amount of the monthly expenditure in the management and repairs of the Welland Canal, from 1st Dec., 1862, to 1st Dec., 1863, (inclusive).

	MANAGEMENT					REPAIRS.				
	Office establishment, clerk, paymaster, &c.	Overseers, lock & bridge tenders, Harbor-masters, (inclusive).	Lighting canal with gas, from Lock No. 2 to 25 (inclusive).	Oil used in lighting the other parts of the canal not lighted with gas, and in working machinery.	Advertising bills of vessels passing through the canal, printing, postage, stationery, telegraph communications, office fuel, travelling expenses, engineers, contingencies, &c.	Total cost of management.	Cartwright's work, constructing and making repairs upon lock gates, bridges, &c., and making repairs of damages done to the works by vessels	Coasting and iron work for lock gates, bridges, &c.	Labor maintaining equipment, sluicing, putting, rubbing, post, bankwork, ditching, setting, &c.	of canal, &c.
1862.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
December.....	132 00	1,855 85	3,008 47	.....	646 83	5,702 95	303 42	57 95	29,226	.....
1863.										
January.....	132 00	903 95	.....	.....	.....	1,035 95	.....	2 75	65 49	.....
February.....	132 00	662 15	.....	.....	7 20	741 35	.....	235 70	.....	.....
March.....	132 00	884 90	.....	.....	120 64	1,137 54	178 25	152 47	137 75	.....
April.....	132 00	2,988 09	.....	526 05	48 45	3,665 22	268 54	165 21	399 79	.....
May.....	132 00	3,287 97	.....	.....	80 00	3,479 97	265 01	134 94	314 72	.....
June.....	132 00	3,303 44	.....	.....	165 97	3,601 41	329 75	582 12	375 37	.....
July.....	132 00	3,247 87	.....	269 05	17 72	3,666 64	354 45	112 71	459 62	.....
August.....	132 00	3,241 12	(a) 3,356 80	.....	.....	6,959 92	203 50	70 83	380 74	.....
September.....	132 00	3,288 81	.....	.....	270 63	3,600 84	354 45	412 05	531 12	.....
October.....	132 00	3,271 19	.....	22 00	3 00	3,473 19	230 98	140 09	418 42	.....
November.....	132 00	3,273 99	.....	265 10	45 00	3,716 00	406 50	209 93	240 11	.....
	\$1,584 00	\$30,159 94	\$6,625 27	\$1,082 20	\$1,404 57	\$40,855 98	3,101 40	\$2,292 15	\$3,661 39	

(a) Paid by transmission from Department to Gas Company.

REPAIRS.

	Lumber and timber furnished for constructing look-gates, and for repairs of look-gates, bridges, &c.	Putting down sill and repairs of Port Robinson lock, removing dams, &c.	Repairs light-house at Port Dalhousie, damaged by fire.	Repairs at Shiphar Creek, waste-weir, lumber, &c.	Repairs old mill at Al-lanburgh.	Repairs of saw used in breaking ice.	Repairs of outer end of West pier at Port Dalhousie.	Ready materials furnished, counter-sunk, spikes, nails, ropes, paint, oil, palms, sheaves, &c.	Total amount of repairs.	Total for management and repairs.
1862.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
December	158 91	71 00	50 00					52 81	989 35	6,692 30
1863.										
January.		422 27							493 51	1,629 48
February		873 53							1,098 63	1,839 98
March.									634 03	1,771 57
April.	185 56								2,222 34	5,917 56
May.	214 59	1,050 00						124 21	1,012 34	4,402 31
June.	193 85							104 12	1,637 72	5,239 13
July.	280 06							170 43	1,319 79	4,996 43
August.	183 68							192 78	1,058 09	8,016 01
September.	147 04							93 03	1,788 52	5,459 36
October.	101 35							100 00	249 60	4,643 22
November.	700 21							95 84	1,215 03	5,640 07
								145 97	1,924 67	
	\$2,054 95	\$3,416 80	\$50 00	\$420 50	\$75 40	\$71 95	\$349 00	\$388 86	\$15,392 02	\$56,243 00

(Signed) S. D. WOODRUFF,
Superintendent Welland Canal.

WELLAND CANAL OFFICE,
St. Catharines, 19th December, 1863.

WELLAND CANAL.

SCHEDULE No. 5.—Schedule of Lands on the Welland Canal sold to sundry persons, with the amount of Sales and Interest to 1st December, 1863, amount paid to 1st December, 1863, and the balance remaining due on the 1st December, 1863.

PURCHASERS.	Number of Lot.	Where situated.	Quantity.	Amount of Sale.	Amount of Interest to 1st Dec., 1863.	Amount of Sale and Interest to 1st Dec., 1863.	Amount paid to 1st Dec., 1859.	Amount paid in 1863 to 1st Dec.	Balance due 1st Dec., 1863.	Remarks.
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	
James R. Benson, on behalf of Hydraulic Co. Municipality of the County of Welland.....	.....	Lots below Thorold..	211 acres 17 per..	8,454 25	5,912 59	14,366 84	2,010 85	.....	112,355 99	
		Lands in Wainfleet..	10,796 acres	12,912 00	6,982 15	19,894 15	3,309 56	.....	16,584 59	In fall.
		do Humberstone	2,048 do							
		do do ...	68 do							
Alexander Lattemore.....	Part of lot No. 27	3rd Com. Wainfleet..	488 acres.	976 00	130 89	1,106 89	1,080 56	26 33	.....
Wm. J. McCalla.....	Parts of lots 34, 35 & 36 South... Lot A marked on plan.....	Village, Pt Robinson		75 00	.....	75 00	.....	75 00	.....	Do
Do	Lot B do do	Do do		56 00	.....	56 00	.....	56 00	.....	Do
Do	Do C do do	Do do		46 00	.....	46 00	.....	46 00	.....	Do
Do	Do D do do	Do do		63 00	.....	63 00	.....	63 00	.....	Do
William Bell.....	Do E do do	Do do		60 00	.....	60 00	.....	60 00	.....	Do
James Mirner.....	Do F do do	Do do		45 00	.....	45 00	.....	45 00	.....	Do
James McCoppen.....	Do G do do	Do do		41 00	.....	41 00	.....	41 00	.....	Do
John Hill.....	Part of lot No. 205, 10 acres..	Township of Thorold.....	10 acres.	104 00	.....	104 00	.....	104 00	.....	Do
				22,832 26	13,025 63	35,857 88	6,400 97	516 33	28,940 58	

(Signed)

S. D. WOODRUFF,
Superintendent Welland Canal.
THOMAS ADAMS,
Paymaster and Clerk.

(Signed)

WELLAND CANAL OFFICE, }
St. Catharines 19th December, 1863.

WELLAND CANAL.

SCHEDULE No. 6.—Statement shewing the amount of Fines and Damages levied, the amount paid to the 1st December, 1863, and the balance remaining due on the 1st December, 1863.

Year.	Date.	Description of Vessel, &c.	Name of Vessel, &c.	Amount of Fines levied.	Amount of Damages levied.	Amount paid from 1st Dec., 1862, to 1st Dec., 1863.	Amount remaining unpaid to 1st Dec., 1863.	Remarks
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	
1857...	April 22...	Schooner	'S. H. Lathrop'		1000 00	1000 00		
"	" 30...	Steamer	'St. Nicholas'	80 00	4800 00		4880 00	
1859...	" 30...	Schooner	'Mohagan'		1953 00		1953 00	
1860...	May 30...	do	'Amelia'		1246 00		1246 00	
1860...	" 16...	do	'Cuba'		10 00		10 00	
1861...	" 14...	do	'Henry Hagar'		22 00	22 00		
"	June 26...	do	'Hyphen'		15 00	15 00		
1862...	May 29...	do	'Mary Morton'	10 00			10 00	
"	June 26...	Propeller	'Kentucky'		10 00		10 00	
"	Aug. 20...	Schooner	'Bridget'		5 00		5 00	
"	Oct. 20...	do	'Theresa'		76 00	76 00		
"	" 20...	do	'J. A. McDonald'		25 00	25 00		
"	Nov. 30...	Propeller	'West'		20 00	20 00		
"	" 30...	Schooner	'T. Y. Avery'		30 00	30 00		
"	Dec. 11...	do	'General Burnside'		250 00	250 00		
1863...	April 11...	do	'Lewis Wells'		50 00	50 00		
"	" 13...	do	'Antelope'		2 00	2 00		
"	" 13...	do	'Minni Belle'		15 00	15 00		
"	" 15...	do	'Minnehaha'		5 00	5 00		
"	" 16...	do	'Persian'		4 00	4 00		
"	" 22...	do	'Jenny Lind'	40 00		40 00		
"	" 22...	do	'John Breden'		5 00	5 00		
"	May 1...	do	'E. P. Ryanse'		1 00	1 00		
"	" 5...	do	'Prince of Wales'		1 50	1 50		
"	" 11...	do	'James Coleman'		1 50	1 50		
"	" 12...	do	'Palk Henry'		5 00	5 00		
"	" 13...	Propeller	'Ogdonsburgh'		7 00	7 00		
"	" 13...	Schooner	'W. S. Wallbridge'		10 00		10 00	
"	" 19...	Bark	'Gibraltar'	5 00		5 00		
"	" 20...	Schooner	'Nucleus'		1 50	1 50		
"	" 21...	Bark	'Classton'		50 00	50 00		
"	" 22...	Schooner	'Kate Murton'	10 00		10 00		
"	June 1...	do	'W. B. Hibbert'		20 00		20 00	
"	" 11...	Propeller	'City of Boston'		25 00	25 00		
"	" 22...	Schooner	'May Queen'		5 00	5 00		
"	July 8...	Propeller	'Bristol'		365 00	365 00		
"	" 16...	do	'Akron'		210 00	210 00		
"	" 27...	do	do		3 00		3 00	
"	" 30...	Bark	'George Thurston'	20 00			20 00	
"	" 31...	Scow	'London'	10 00		10 00		
"	Aug. 8...	Propeller	'Buckeye'		6 00	6 00		
"	Sept. 11...	Schooner	'Gilbert'		25 00	25 00		
"	" 16...	Propeller	'Vermont'		1511 00	1511 00		
"	" 21...	do	'Wisconsin'	60 00		60 00		
"	" 28...	Schooner	'Denmark'	10 00		10 00		
"	Oct. 16...	Propeller	'Akron'		00	2 00		
"	" 16...	do	do		2 00	2 00		
"	" 17...	Schooner	'J. F. Warner'		2 00	2 00		
"	" 20...	do	'S. Robinson'		10 00	10 00		
"	" 20...	do	'Mary Roe'		9 00	9 00		
"	" 21...	Propeller	'Bristol'		60 00	60 00		
"	" 25...	Schooner	'James Coleman'		10 00		10 00	
Carried forward...				\$245 00	\$11,885 50	\$3953 50	\$8177 00	

WELLAND CANAL.

SCHEDULE No. 6.—Statement shewing the amount of Fines levied, &c.—Continued.

Year.	Date.	Descrip- tion of Vessel, &c.	Name of vessel, &c.	Amount of Fines levied.	Amount of Damages levied.	Amount paid from 1st Dec., 1862, to 1st Dec., 1863.	Amount remaining unpaid to 1st Dec., 1863.	Remarks
				\$ cts.	\$ cts.	\$ cts.	\$ cts.	
			<i>Brought forward...</i>	245 00	11,885 50	3953 50	8177 00	
1863...	Oct. 31....	Schooner ..	' W. G. Grant'.....	.....	6 00	6 00	.....
"	Nov. 14... .	do	' Wm. Sanderson'.....	.....	50 00	.....	50 00	
"	" 14....	do	' Wm. Case'.....	.....	15 00	.....	15 00	
"	" 14....	do	' Paragon' .....	.....	10 00	.....	10 00	
"	" 14....	do	' Raleigh' .....	.....	16 00	.....	16 00	
"	Oct. 30....	do	' A. Boody'.. .....	.....	15 00	15 00	.....
"	Nov. 15....	do	' Selkirk'.....	.....	645 00	645 00	.....
"	" 16....	Propeller ..	' Ogdensburgh'	10 00	.....	.....	10 00	
"	" 23....	do	' Michigan'.....	.....	25 00	.....	25 00	
"	" 24....	Bark	Sovereign of the Lakes .....	.....	40 00	40 00	.....
"	" 24....	Propeller ..	' Buckeye' .....	.....	10 00	.....	10 00	
"	" 24....	Schooner ..	' Athenian'.....	5 00	.....	5 00	.....
"	" 27....	do	' Tecumseh".....	.....	15 00	.....	15 00	
"	" 30....	do	' Frontier City'.....	.....	15 00	.....	15 00	
				\$260 00	\$12747 50	\$4664 50	\$8,343 00	

(Signed)

S. D. WOODRUFF,
Superintendent Welland Canal.

(Signed)

THOMAS ADAMS,
Paymaster and Clerk.

WELLAND CANAL OFFICE, }
St. Catherines, Dec. 19th, 1863. }

APPENDIX C.

LACHINE CANAL OFFICE,
Montreal, 31st December, 1863.

SIR,—In compliance with instructions of the 4th inst., I beg herewith to submit my Annual Report for 1863 :—

BEAUHARNOIS CANAL.

The water was shut out of this canal on the 15th day of April, and such examinations and repairs made as the limited time would admit of, preparatory to its being opened the season, when the main canal and structures connected therewith were generally found in good order. The water was again let in the canal on the 29th day of April, and opened to the trade on the 2nd day of May, after which the navigation was maintained to the nine feet depth of water on the sills, until the 4th day of December, when it was closed by ice.

During the time the trade was only interrupted eighteen hours, when replacing the lower gates at lock No. 10, which were carried away by the propeller "Colonist," on the 14th day of May.

The banks, ditches, dykes, dams and all other works have been kept in an efficient state throughout the season.

The dyke through Hungry Bay continues to settle at several points, and about 4,000 lineal feet of the dyke has been raised twenty inches, and it is considered that a like extent will require raising next year.

The season was so unfavorable that the lock walls were not pointed last April, as intended; but, if the weather prove at all favorable, this must be attended to next spring.

Three pairs of new lock-gates, built by contract at Morrisburg, were delivered in September. The set for lock No. 8 was immediately brought into use, and gates substituted at other places, as became necessary.

There are at present three pairs of spare lower lock-gates on hand, and one pair for the Guard Lock, with but two pairs of upper gates; one pair of these must be hauled out and repaired; the other pair are old framed gates that have been repaired, and should not be used except in case of emergency. At least two new pairs of upper gates should be provided for this canal.

All the swing bridges, except at lock No. 14, have been well painted and are in good order. The bridge at lock No. 14 must be thoroughly overhauled during the winter. New lumber has been provided for that purpose. Several other bridges have been replanked and repaired.

The regulating weirs are generally in good order.

The breast-wall of the by-wash, at St. Timothy, was partially rebuilt last spring; but during the season a leakage was discovered in a portion of the foundation, which was actually stopped without drawing down the water. A further examination will be necessary before opening the canal next spring.

The work of extending the south pier, at the lower entrance of the canal, referred to in last year's report, should be proceeded with as early as possible. Much delay and confusion has been experienced during the busy season, caused by the present limited accommodation for mooring vessels—the entrance to the lock being at times entirely blocked up.

The difficulty in obtaining timber for repairing the superstructure of the pier at the end of the canal, has prevented the work from being done. It is desirable that authority should be granted to obtain suitable timber during the present winter, and the repairs completed as early as possible next season.

A statement of the fines and damages, collected by order of the local superintendent, amounting to \$608 38, will be found enclosed.

The cost of repairs and maintenance for 1863 amount to \$5,942 13, and \$8,902 91 for working expenses. The ordinary repairs for 1864 are estimated to cost \$7,165.

LACHINE CANAL.

The various works connected with this canal have been efficiently maintained throughout the year. The expenditure for repairs and maintenance is necessarily much larger than for any other division of the St. Lawrence canals, caused by the strong current created in supplying water for the mills, the additional trade of the entire Ottawa route and the maintenance of the dock walls, wharves, sheds and basins at Montreal and Lachine. A large portion of this expenditure is, however, caused by the inordinate current produced in supplying mill power, which tends to render vessels unmanagable, washes the banks, fills up and forms bars in the channel and basins.

The delays experienced last year below lock No. 1 have, to a great extent, been remedied by the action of the Harbor Master.

The construction of the regulating weir and bridge at lock No. 3, referred to in report for 1862, should be proceeded with as early as practicable.

The limited dock and basin accommodation afforded by the canal at Montreal, no doubt operates unfavorably towards the natural development of the trade, a large increase in trade cannot be expected until suitable accommodations are provided.

Accommodation for the wood and lumber trade deserve special attention.

The Montreal, or bridge No. 1, was thoroughly overhauled, and the largest portion of the wood work renewed last winter. Timber has been prepared for repairing bridges Nos. 3 and 4, at Brewster's and at Cote St. Paul. These repairs have of necessity to be done in winter, when a temporary bridge is formed by the ice. The water wheel and machinery for working the Montreal bridge must also be repaired.

The new pair of lower gates for locks Nos. 1 and 2, that were under contract at the date of last year's report, were delivered early in the season. The spare lower gates for locks 3 and 4 have been put in good order. One new pair of gates should be built for the guard lock. Any accident of a serious nature occurring at this lock would be attended with disastrous results. The gates now in use should be taken out and repaired, but this cannot be done until others are provided. A new pair of gates have been built for the old lock used as a graving dock at Montreal, and a new bulk head, with large sluice gates, placed in the old lock at Lachine, used as a regulating weir. The flow of water from this lock checks the cross current from the regular weir, and enables vessels to enter or leave the lock with greater ease and safety.

The walls of locks Nos. 3 and 4 have for years been bad—temporary repairs prove to be of little service, beyond barely keeping them in working order; the faced stones are frequently forced out of place by the pressure of water from the rear. The entire walls of the locks must of necessity be rebuilt in cement mortar before they can be considered safe.

The bridge and decayed portion of the wood work above surface water in the large waste weir at Basin No. 2 must be renewed, and special attention given to grouting and pointing the dock walls in front of the mills.

The steam dredge and scows were put in good order last spring, and have been employed the entire season in basins 2, 3 and 4.

The canal was fully opened on the 4th day of May, and finally closed on the 10th day of December, very little business, however, was done after the 1st.

A statement of the estimated cost for the ordinary repairs and maintenance, for 1864, amounting to \$10,000 will be found herewith, also a statement of the amount collected for fines and damages, by order of the local superintendent.

There has been expended for repairs and maintenance	\$ 8,879.11
In connection with the steam dredge.....	4,453.31
Making a total of	13,332.42

There has been \$11,806.91 collected, besides permanent rents and regular tolls, viz :

For fines and damages, by order of the superintendent	\$ 289.00
" dues on firewood at Lachine	\$ 271.65
" dues on lumber in basin at Lachine	1,075.45
	1,347 10
" use of old lock at Montreal, used as a graving dock ..	684.25
" vessels wintering in canal	584.75
" storage in flour sheds	3,181.11
" wharfage on vessels entering canal from Lower Ports, and on firewood	5,530.70
" temporary use of canal lands for repairing vessels during winter 1863 and '64	190.00
Total.....	\$11,806.91

Propellers and other large vessels engaged in the through trade between the West and Montreal, suffer much inconvenience and loss in consequence of being obliged to break bulk by the discharge of a portion of their cargo before entering the St. Lawrence canals, which must necessarily increase the cost of transportation, and is an inducement on their part to force their way through the St. Lawrence canals, drawing more than nine feet of water—the depth of water being 10 feet in the Welland Canal and 9 feet in the St. Lawrence canals. This difficulty can only be overcome by establishing a uniform scale of navigation throughout. The small locks on the Welland Canal are 150 feet in length by 26 in width, with 10 feet water, while the locks on the St. Lawrence canals are 200 feet in length by 45 in width, with 9 feet water. Still vessels pass through the Welland Canal with nearly one-third more cargo than through the St. Lawrence canals. It is, therefore, of great importance to the trade of the Province, and especially with the West, that the depth of water in the St. Lawrence canals should be increased to 10 feet, as in the Welland Canal. Until this is accomplished, this great inland scheme of navigation must remain imperfect, and to a certain extent unsatisfactory.

CARILLON AND GRENVILLE CANALS.

The water in the Ottawa river was unusually low during a large portion of the months of August and September, causing serious inconvenience to vessels at the upper entrance to the Grenville Canal. This portion of the canal is subject to the fluctuations of the Ottawa river, and is annually filling up with earth, stone and gravel washed from the banks by the surge in high water, which interferes with the passage of large square bottomed heavy laden vessels at low water. The temporary dredging which has kept this channel comparatively free for the past three or four years, is found to be insufficient for the requirements of the trade, which is rapidly increasing. The maintenance of these canals in an efficient state for its accommodation is now a matter of absolute necessity. The channel above the guard lock at Grenville should therefore, be enlarged and deepened during medium high water, in the early part of next season, by one of the steam dredges recently employed on the St. Lawrence canals. After this is done there will be little difficulty in keeping the full draft of water for which these canals were originally constructed.

Four pairs of new lock-gates have been built by contract. they were completed late in November, and will be brought into use early next season. One pair of lower gates for lock No. 2, and a full set for lock No. 3, should be constructed this winter. The old gates are so rotten that no dependence can be placed upon their stability. One of the lower gates at lock No. 3 gave way in August, but was soon repaired. This caused a delay of about two and a half days, fortunately but few vessels were detained.

The walls of lock No 2 leak badly. The water appears to find its way through the north wall, and is washing away the bank in rear, and is discharged into the river below lock No. 1. These walls of the lock must be thoroughly overhauled, and pointed on both sides, and well puddled up in rear before the opening of navigation. The breast wall and mitre sill at lock No. 10 has been crumbling away for some years. A portion of it gave way in September, and was temporarily repaired with timber without much interruption to the trade. This wall must be rebuilt in April next.

The superstructure of the pier head at Grenville has been rebuilt from surface of low water, and the general repairs, as in former years, confined to such works as were absolutely necessary for keeping the canal in a passable state. Nearly all the structures being in a dilapidated condition, the cost of keeping them in repair must of necessity increase from year to year, as the structures deteriorate. The maintenance of the North River dams and feeder form a large item in the expenditure.

There has been expended for repairs.....\$5,178.70
Expended for working expenses 3,644.81

Amounting for the year to \$8,823.51

and \$8,547.20 collected, viz :—

For tolls		\$8,403.86
“ fines and damages	\$26.00	
“ wintering vessels in the canal	20.00	
“ warfage, ground rent and firewood	97.34	
		143.34
		<u>\$8,547.20</u>

Statement in detail of the estimated cost for repairs for 1864, amounting to \$6,469, together with a statement of the amounts collected for fines and damages, and for ground rents, &c., will be forwarded herewith.

These canals were opened on the 1st day of May, and closed for the season on the 2nd day of December.

ST. ANNE'S LOCK AND DAM.

The expenditure at this place for the past year has been confined strictly to working expenses; but, at the same time, in works of this description, where such large quantities of timber have been employed in their construction, there must of necessity be more or less repairs required. The timber in the superstructure, of fully 200 feet of the wing dam above the lock, is now quite rotten, and must be renewed next season, and about 500 feet of the face, or inside, sheeted with tamarac, or elm plank.

The mooring posts in the north, or land pier, below the lock, must also be renewed; and the docking on the river side of the lock repaired and sheeted with plank, to secure it from damage caused by rafts and ice during high water.

The trade through this lock has been much larger than in 1862, but the revenue less, owing to the diminished rate of tolls, which collectively amount to \$5,013.64. The estimated cost of repairs for 1864 amounts to \$1,200, details of which will be forwarded herewith, with a statement of the trade furnished by the collector.

The navigation was opened on the 28th day of April, and closed on the 5th day of December.

ST. OURS LOCK AND DAM.

The water in the River Richelieu was again unusually high during the early part of the season, which inundated a large portion of the works, and caused considerable damage. The coping on the west abutment of the dam and east wing wall of the lock was much shaken and displaced by the ice, and the bank between the lock and main shore, near the mill, injured. These damages have been made good—the bank raised and the surface paved with field stone, to secure it from further injury by high water. For the past two years the water has risen above the protection walls, at each end of the dam, cutting into the banks and causing slides. These walls should be raised, so as to protect the banks against the action of the water.

About 12⁸ toises of stone have been used in connection with the works, viz :—

80 toises placed in the apron cribs below the dam.

10 “ “ “ sink holes above the dam.

28 “ “ “ repairs to protection walls, banks and piers at locks.

The scows have been repaired, and a new scow built for breaking the water on the dam. The lock-gates above the surface water have been painted, and new chains furnished for working them.

The segment plates, on which the toe rollers of the lower gates work, appear to be out of order, and will probably have to be repaired before the end of next season.

There has been \$1961.95 expended in repairs, leaving \$838.15 of the amount authorized unexpended, which, it is thought, will be sufficient for ordinary repairs for 1961.

There has been \$9.25 collected for fines and damages, by order of the superintendent, a detailed statement of which will be forwarded herewith.

The dam has been thoroughly examined, and the top part for about 300 feet was laid dry, where the cuts were found in good order.

Heavy-laden vessels experienced some difficulty a short distance below the lock, at the season of low water, where the remains of an old dam still exist. This obstruction should be removed.

This lock was opened for the passing of vessels on the 29th day of April, and closed on the 3rd day of December. The delays during the season amount to be about 30 hours, while adjusting the rollers on the lower gates and removing one of the collars.

CHAMBLY CANAL.

This canal was opened on the first day of May, and closed on the 8th day of December. The only detentions were caused by vessels grounding when overloaded; this only occurred to large flat-bottomed vessels, which are always liable to strike the toe of the inside slopes, especially at the curves, and where banks have been formed by the small creeks and ditches discharging into the canal. The large number of steamboats used for towing on this route wash and destroy the banks, which also increases the deposit and expenditure for repairs. The high water in the river during the months of May and June softened the banks between the Island of St. Thérèse and St. Johns, causing slides and damaging the slope walls, especially on the outside or river slope; repairs from this cause have added largely to the cost of maintenance.

There was one pair of lower gates for lock No. 4, and a new bridge built by the lock and bridge tenders last winter, and the gates and bridges on the entire canal put in working order.

A large amount of silt and mud was removed from the bottom of the canal last spring. This deposit is annually accumulating, which, to a great extent, is the cause of detention to vessels, especially on the long level between locks Nos. 1 and 2. The removal of this deposit is very expensive and difficult. The steam dredge could be employed here during the entire season to good advantage.

The banks between locks Nos. 3 and 6 have been raised, and about 150 toises of stone used on such portions as required protecting and strengthening.

The walls of locks Nos. 1 and 7 leak badly, and will require special attention before opening the canal. Portions of the breast and upper recess walls at lock No. 7 may have to be rebuilt; but an effort will be made to put them in working order for another season without incurring much expense.

The planks in the bottoms of locks Nos. 4, 5 and 6 have been raised at different times during the season. The entire bottom between the walls of the locks must be replanked; the upper gates at locks Nos. 2 and 4 rebuilt during the winter, and the gates at locks Nos. 5 and 7 repaired.

The bridges are generally in very good order. The wood work of No. 8 should be renewed, and others replanked.

The superstructure of the upper, or south portion of the wharf at St. Johns is in a very dilapidated condition, and should be repaired.

The by washes are in good order.

The trade over this route has been very active throughout the entire season, which has, undoubtedly, been one of the most prosperous on record.

The cost of repairs and maintenance for the past year amounts to the
 sum of \$ 7,631 00
 and the working expenses to 6,357 08

The total expenditure \$13,988.08

and the total revenue \$25,262.53, viz :—

For fines and damages	\$ 134.00
For wharfage dues	57.87
For tolls	25,070.69

Total amount collected \$25,262.53

The repairs and maintenance for 1864 are estimated to cost \$7,560 00.

ROADS.

A new road has been built from the centre of lot No. 11 to the centre of lot No. 28, in the front concession of Lancaster, County of Glengary, as a substitute for the old road, rendered impassable for a large portion of the year by the high water in Lake St. Francis. This work was commenced in June and fully completed in August.

The worst portions of the roads on the Indian Reserve, leading from Canghnawaga to St. Martin, and to Chateauguay, have been repaired and made passable. The season was well advanced when the work was commenced; the repairs were therefore confined to such portions as were considered impassable. The work should be resumed in May or June next.

I am, sir,

Your obedient servant,

(Signed)

JOHN G SIPPPELL,

Superintendent Engineer.

BEAUHARNOIS CANAL.

DETAILED Statement of the Estimated Cost for Ordinary Repairs and Maintenance for 1864.

Structures.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
			\$ cts	\$ cts.	\$ cts.
Main Canal and Banks...	General repairs, .. say			1000 00	
	Stone for protecting banks, tons	80	0 00	480 00	
	Mooring posts,	50	2 00	100 00	
	Raising banks, lin yds.	300	1 00	300 00	1880 00
Ditches and Culverts.....	Cleaning ditches apts.	350	2 00	700 00	
	" culverts say			150 00	850 00
Bridges	General repairs, \$	5	40 00	320 00	
	Bridge at lock No. 14, say			250 00	
	P' unk for farm bridges, F B. M.	10000	12 00	120 00	690 00
Locks	Painting walls	8	30 00	240 00	
	General repairs to gates, &c	9	75 00	675 00	
	Wing walls, cts.	200	1 00	200 00	
	Oak timber for gates, &c feet	80	1 00	80 00	
	Pine " " " " "	500	20	100 00	1615 00
Lock Houses.	Ordinary repairs,	15	20 00		300 00
Pier at Head Canal.....	Pine timber lin. feet	4000	15		720 00
Dykes and Dams	Dyke through Hungry Bay, yds.	2000	30	600 00	
	Dams, say			450 00	1050 00
Total estimated cost.....					\$7165 00

BEAUHARNOIS CANAL.

STATEMENT of the amount of Fines and Damages collected by order of the Superintendent, for the year 1863.

Date.	Names of Vessels.	Master or Owner.	Amount.	Remarks.
			\$ cts	
Last fall.	Barge Onward.	Berry & Co.	3 00	Damage to lock No. 13.
Feb. 22	R. Deschamps.	Carter	1 50	Chopping a snubbing post.
May 11	Propeller West	Cowan & Co.	10 72	Damage to gates, lock No. 11.
" 16	" Colonist	Jacques & Co.	500 00	Carrying away lower gates, lock 10.
" 19	" In lion	do	5 34	Damage to gates, lock No. 12.
" 24	Steamer Ranger	Black & Co.	20 00	Violation of canal regulations.
" 23	Steamer America	Horry	12 00	Damage to lock No. 11.
June 15	Propeller St. Lawrence	Jacques & Co.	4 20	" upper wing wall, lock 12.
" 16	Steamer Gen	Smith	10 00	Violation of canal regulations.
" 25	Barge Valence	Berry & Co.	1 50	Damage to lock No. 8.
" 29	Steamer Chaudron	Ind. Ste. Nav. Co.	3 50	" to lock gate, lock No. 10.
July 20	Propeller America	Norris & Co.	20 00	Fine and damage to bridge over lock 12
Oct. 15	Steamer Osprey	Henderson	8 00	Damage to upper wing wall, lock 8.
Nov. 6	Barge Kate	Robertson	4 00	Violation of canal regulations.
		Total	\$608 38	

BEAUHARNOIS CANAL,
December, 1863

(Signed)

PIERRE LAURENCEL,

Superintendent.

LACHINE CANAL.

DETAILED ESTIMATE of the cost of Repairs and Maintenance for 1864.

Structures.	ITEMS.	Quantities.	Prices.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Locks	General repairs to walls	5	100 00	500 00	
	Gates, mitre sills, &c.	5	100 00	500 00	1000 00
Bridges	Overhauling bridges 3 and 4. say	2	300 00	600 00	
	Water wheel for opening No. 1. say		30 00	50 00	
	Pine plank feet B. M.	40000	20 00	800 00	
	Spikes for do lbs	1000	00 10	100 00	
	Pine timber lineal feet	500	00 20	100 00	1650 00
Regulating Weirs	General repairs	6	50 00	300 00	
	Pine timber lineal feet	450	00 20	90 00	
	do plank feet B. M.	10000	20 00	200 00	590 00
Piers & Booms at Lachine.	General repairs	say			500 00
Flour Sheds and Wharves.	Pine plank pieces	3000	30 00	900 00	
	Spikes lbs	2500	00 10	250 00	
	Timber lineal feet	1500	00 20	300 00	
	Water conductors to Sheds. say			75 00	
	Roof to do "			125 00	
	Dock Walls "			500 00	
	Wood and Lumber basins "			550 00	2700 00
Buildings	General repairs	say	8	50 00	400 00
Prism and Banks of Canal.	General repairs	say		3000 00	
	Moorings posts	100	2 50	250 00	3250 00
	Total estimated cost.				\$16,090 00

STEAM DREDGE.

DETAILED ESTIMATE of Working Expenses and Repairs for 1864.

Structures.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
				\$ cts.	\$ cts.
Repairs	Deck and hull of dredge .....	.....	say	200 00	
	Scows.....	.....	"	100 00	
					300 00
Engine.....	Blacksmith's work.....	.....	"	100 00	
	Engineer and assistant.....	.....	.....	85 00	
					185 00
Working Dredge..	Six months' working expenses.....	.....	\$650 00	.....	3900 00
	Total estimated cost.....	.....	.....	.....	\$4385 00

LACHINE CANAL.

STATEMENT of the amount of Fines and Damages collected by order of the Superintendent, for 1863.

Date.	Name of Vessel.	Master or Owner.	Amount.	Remarks.
			\$ cts.	
May 22...	Steamer Empress.....	I. S. N. Co.....	20 00	Damage to dock wall, basin No. 3.
do 30...	Barge Saguenay.....	McLennan	10 00	Fined for being abandoned in canal.
June 6...	do Maud	Robertson	50 00	Damage to lock No. 3.
do 16...	do Stadacona	Glassford & Co...	30 00	do steam dredge.
do 25...	Schooner Peerless.....	Cook & Co.....	12 00	do upper gates, lock 4.
July 9...	2 rafts cedar	Lesperance & Co..	10 00	Fined for being abandoned in canal.
August 3...	Steamer Bowmanville.....	Black & Co.....	35 00	Damage to bumping post & mas'y, l. 3
Sept. 2...	Barge Lyre.....	Cowan & Co.....	10 00	do stone pillar, centre pier, W. bridge.
do 7...	2 piles of planks.....	Henderson	5 00	Fined for obstructing canal bank.
do 10...	1 double crib lumber.....	Corporation	5 00	do for being abandoned in canal.
do 21...	Barge Lily	Robertson.....	5 00	Damage to railing, Brewster's bridge.
October 1...	Schooner Caroline.....	Petit	6 00	do bumping post, lock No. 3
do 13..	Steamer Regas Ferreos.....	Clark & Co.....	40 00	do lower gates, lock No. 1.
do 22...	Schooner Adelaide.....	Thibaudeau	6 00	Breaking lamp, lock No. 3.
Nov. 5...	do City.....	Langlois.....	25 00	Damage to b. post & masonry, lock 4.
do 21...	do Christine	Hamelin	10 00	Fined for violation of canal regulations
do 26...	do Philimen	Perrault	10 00	do do do do.
		Total.....	\$289 00	

(Signed)

ALEX. BISSETT,
Superintendent.

ANAL OFFICE,
November, 1863
}

CHAMBLY CANAL.

DETAILED ESTIMATE of the cost of Repairs and Maintenance for 1864.

Structures.	I T E M S .	Quantities.	Price.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
.....	General repairs.....	9	100 00	900 00	
	Oak timber for repairs to gates and for new gates.....cubic feet.	1000	1 00	1000 00	
	Pine timber..... do	500	0 20	100 00	
	Iron work.....say	.....	.....	150 00	
					2150 00
s	General repairs.....	9	25 00	225 00	
	Pine timber.....cubic feet	1000	0 20	200 00	
	Pine plank.....feet B. M.	10000	20 00	200 00	
	Iron work.....say	.....	.....	75 00	
	Repairs to abutment.. ..	4	25 00	100 00	
					800 00
es.....	Pine timber.....cubic feet	3000	0 20	600 00	
	Stone filling.....toise	20	8 00	160 00	
					760 00
ing out Canal and	Cleaning bottom of canal.....say	.....	.....	1600 00	
pairing banks.....	Protecting banks, &c.....lin. yards	6000	0 25	1500 00	
	Stone for do .....toise	150	5 00	750 00	
					3850 00
	Total estimated cost.....	.....	.....	.....	\$7560 00

CHAMBLY CANAL.

STATEMENT of the amount collected for Fines, Damages, &c., by order of the Superintendent, for 1863.

Date.		Names of Vessels.	Amounts.	REMARKS.
1863			\$ cts.	
June	8.....	Barge Holcomb.....	12 00	Damage to upper gates, lock No. 5.
do	13.....	do J. M. Carrier.....	1 00	do lock No. 3.
do	22.....	do St. Joseph.....	2 50	do bridge No. 7.
July	24.....	do Providence.....	4 00	do do No. 2.
August	19.....	do Jeannette.....	2 50	do do No. 7.
do	27.....	Steamer Erie.....	3 00	do lock No. 4.
Sept.	16.....	Barge Emma.....	1 50	do and fender.
do	18.....	do Providence.....	3 50	do lock No. 2.
do	21.....	Bateau (no name).....	1 50	do lock No. 3.
do	24.....	Barge Matilda.....	10 00	do fender, lock No. 4.
Oct.	2.....	Steamer Erie.....	4 00	do lock No. 4.
do	3.....	Barge Boule D'or.....	12 00	do lock gate No. 2.
do	2.....	Steamer John Radpath.....	1 00	do lock No. 5.
do	29.....	Barge Mary Mack.....	3 00	do lock gate No. 5.
do	30.....	Bateau Pride.....	4 00	do do No. 8.
Nov.	1.....	Barge Amy Hart.....	15 00	do bridge No. 6.
do	2.....	Barge of steamer Ida.....	2 50	do lock gate No. 3.
do	2.....	Steamer Erie.....	15 00	do bridge No. 7, and lock No. 3.
do	2.....	Barge of steamer Hope.....	2 00	do do No. 7.
do	5.....	Barge Liffey.....	1 50	do do do.
do	6.....	Bateau Hubbard.....	6 00	do lock No. 5.
do	8.....	Barge Transport.....	1 50	do bridge No. 7.
do	8.....	do No. 27.....	1 00	do lock gate No. 2.
do	9.....	Steamer Whitehall.....	2 50	do do No. 3.
do	12.....	Barge of steamer Fern.....	2 50	do do No. 7.
do	12.....	do do.....	4 00	Fined for abusive language used by captain.
do	13.....	Barge St. Antoine.....	5 00	Damage to lock gate No. 6.
do	15.....	do St. Louis.....	1 50	do fender, lock No. 5.
do	20.....	do St. Michel.....	2 00	do lock gate No. 8.
do	21.....	do do.....	1 00	do bridge No. 6.
do	21.....	do Mary.....	0 50	do lock No. 9.
do	27.....	do St. Jean Baptiste.....	1 00	do do.
do	27.....	do Wartell.....	4 00	do lock gate No. 2.
			134 00	
Amount collected for wharfage.....			57 87	
Total.....			\$191 87	

(Signed)

C. PRÉFONTAINE,

Superintendent

CHAMBLY, December, 1863.

ST. OURS LOCK AND DAM.

STATEMENT of the Amount of Fines and Damages Collected by Order of the Superintendent, for the year 1863.

Date.	Names of Vessels.	Master or Owner.	Amount.	Remarks.
1863.			\$ cts.	
May 24.....	Barge "Orb".....	Shelton	1 00	Damage to upper pier.
June 9.....	do "Martin"	Wasburn.....	2 00	Fine, and damage to pier.
do 27.....	do "Fame".....	Veille.....	2 00	do do do
July 17.....	do "Corsaire".....	Robillard	1 00	do do to upper gate.
Aug. 2.. ..	do "Emu".....	Leroux.....	1 00	Damage to pier.
do 28.....	do "Martha"	Rook	0 75	One list broken.
Sept. 12.....	do "Jane".....	Louis	0 50	One old list broken.
Nov. 25.....	Stmr. "Chambly"....	Lamoureux.....	1 00	Damage to bumping post.
		Total	\$9 25	

(Signed) LÉVI LARUE,
Superintendent.

ST. OURS LOCK, December, 1863.

STE. ANNE'S LOCK AND DAM.

ESTIMATED COST in detail of the necessary Repairs and Maintenance for 1864.

Structures.	ITEMS.	Quantities.	Price.	Amounts.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Wing Dam above Lock.....	Pine timber.....lineal feet	2500	00 20	500 00	
	Pine plank .....feet B. M.	12000	20 00	240 00	
	Tamarac or Elm do.....do...	10000	20 00	200 00	
	Spikes for do.....lbs.	300	00 10	30 00	
					970 00
Land Pier below Lock.....	Mooring posts.....	25	2 00	50 00	
	Pine plank for footpath...feet B. M.	4000	20 00	80 00	
	Spikes .....lbs.	50	00 10	5 00	
					135 00
Docking on river side of Lock.	Pine timber....lineal feet	250	00 20	50 00	
	Tamarac or Elm sheeting...feet B. M.	2000	20 00	40 00	
	Spikes for do.....lbs.	50	00 10	5 00	
					95 00
	Total estimated cost.....				\$1200 00

STE. ANNE'S LOCK AND DAM.

COMPARATIVE Statement of the number of Steamers and other Craft that passed through the Ste. Anne's Lock during the seasons of 1862 and 1863, and the amount of Tolls collected.

VESSELS.	1862.			1863.		
	Number.	Tons.	Amount of Tolls.	Number.	Tons.	Amount of Tolls.
			\$ cts.			\$ cts.
British Steamers.....	923	49906	} 6944 68	1081	55497	} 5013 64
Sailing and other Craft.....	2991	186437		3960	255978	
American Vessels.....	86	5386		100	6798	
	4000	241729	5013 64	5041	318273	\$5013 64
Decrease in Tolls for 1863.....			\$1931 04	4000	241729	
Increase in Vessels and Tonnage for 1863.....				1041	76544	

(Signed)

JOHN BARRETT,
Collector of Tolls.

STE. ANNE'S LOCK, }
December, 1863. }

CARRILLON AND GRENVILLE CANAL.

DETAILED Estimate of the Cost for Ordinary Repairs for 1864.

Structures.	ITEMS.	Quantities.	Price.	Amount.	Totals.
			\$ cts.	\$ cts.	\$ cts.
Locks	Excavating behind lock No. 1...c. yds.	650	0 30	195 00	485 00
	Puddle behind wall..... "	380	0 50	190 00	
	Painting, grouting, &c.....say			100 00	
	Rebuilding breast wall at lock No. 10 .....cub. yds.	50	8 00	400 00	450 00
	Unwatering work.....say			50 00	
	General repairs to lock walls, gates, sluices, &c.....say	11	100 00		1100 00
Feeder for Carillon Canal..	Repairing dams on North River....say			250 00	500 00
	Cleaning feeder, &c.... say			250 00	
General repairs to Canal ...	Cleaning bottom Carillon Canal.....say			150 00	2450 00
	do do Grenville do .....say			500 00	
	Protecting and raising banks.....say			1500 00	
	Repairs to fences and roads.....			300 00	
Lock Houses, &c.....	General repairs.....	11	25 00		275 00
	Total cost for ordinary repairs.....				\$5260 00
	Dredging channel above guard lock, say.....				1200 00
	Total estimated cost.....				\$6460 00

CARILLON AND GRENVILLE CANAL.

STATEMENT of the amount of Fines and Damages collected by Order of the Superintendent:—Also the amount collected for Ground-rent and Firewood, and for Vessels wintering in Canal, for the year 1863.

Data.	Name of Vessels, &c.	Amounts.	Totals.	Remarks.
1863.		\$ cts.	\$ cts.	
May 20.....	Steamers "Buckingham"	5 00		Displacing coping stone, lock 9.
do	"Sandford"..	5 00		Striking wing wall, lock No. 3.
July 24.....	"Renfrew"	5 00		Removing stone, lock No. 9.
Aug. 26.....	"Conroy"	5 00		Breaking stone lower pier, lock No. 9.
do	"Peel"	2 00		Removing stone in wing wall, lock No. 9.
Nov. 22.....	"Morning Star"	2 00		Violation of canal regulations.
do	"Excelsior"...	2 00		do do do
			26 00	
	For 5 vessels wintering in canal...\$4 00		20 00	
	60Cords wood at locks 1 and 2	1 00		
112	do do 3.....	1 86		
232	do do 4.....	3 88		
3110	do do 5, 6, 7 and 8....	51 83		
1176	do do 9.....	19 62		
92	do do 10.....	1 52		
1060	do do 11.....	17 63		
			97 34	
	Total.....		\$143 34	

(Signed)

JOHN THOMSON,

Superintendent.

CARILLON, December, 1863.

APPENDIX D.

RIDEAU CANAL.

SIR,—In compliance with instructions conveyed to me in your letter dated 4th inst. No. 47,919, I beg respectfully to submit the following report on the state of the works under my charge.

The navigation of the Rideau Canal has been maintained during the past season, viz: from the 1st of May to the end of the month of November, without any interruption.

A sudden rise of the water occurred on the 14th of April, causing a flood, which lasted about ten days, which was almost as high as the one of 1862, that did so much damage to the canal. Additional provision had, however, been made in the works recently constructed to pass such floods, and the water now can easily be passed; the chief difficulty consists in managing the ice and drift wood. A waste weir, or overflow, of ample dimensions, should be constructed, if possible, at each station on the Rideau river, to pass these. The want of this provision has been a fruitful source of expense and trouble.

Appended is a comparative statement of the expenditure on the canal, for several years past; also a statement shewing in detail all the works and repairs required during the next season, amounting to \$16,317 93, as shewn in the schedule. Some of these, however, may last another season with some slight repairs, but they cannot be depended upon with certainty. It would, however, be advisable to have the timber provided for the lock-gates, and have them framed, as there are no spare ones on hand, in case an accident or breakage should occur. This canal is now in a better state than formerly, when it was transferred to the Provincial Government. A reference to the Hon the Commissioner's report for 1858 will shew the state of the works at that time that were dangerous. Most of these which required reconstruction have since been rebuilt. They were chiefly wooden structures, or depending upon wooden structures for support. They had served their time, and were decayed and dilapidated.

The following is a brief description of the different works on the canals, and their condition at present.

OTTAWA STATION.

The masonry of the combined locks, eight in number, is in good order. Two pairs of lock-gates are old and much decayed. They may last another year by care and some small repairs, but are not to be depended upon.

The old dry dock might be made useful at a moderate cost; vessels have now to be repaired in the locks. The lower lock and entrance to the canal is gradually being filled up with refuse from the saw mills at the Chaudière, as has frequently been reported.

The embankment at Dow's Swamp, which is 25 to 30 feet high, is subject to slips in the spring on account of not having sufficient slope on the outside. The inner slope is, however, good and faced with gravel; the top is low and narrow and has been somewhat worn by the action of the water. It requires a quantity of gravel to make it quite secure.

HARTWELLS.

At this station there are two locks combined; connected therewith is a cut stone waste weir, with a small opening in the centre to run off the water. The masonry of the locks is in tolerable good order, having been well grouted during the stoppage of the navigation last year. The masonry of the waste-weir is bad; the stones have been displaced by the frost.

A new pair of gates are required here; the present ones are old and have had the posts applied, and have been patched as much they will bear.

From this station to Hog's-back, a distance of a mile, the canal is located partly on side hill cutting; the bottom is about 30 feet above the Rideau River. Slips have occurred here which have been expensive to repair, and particular attention has to be paid to these banks.

HOGSBACK.

At this station the side cut from Ottawa, 5½ miles long, enters the Rideau river. The works are two locks combined, a retaining dam 45 feet high and 200 feet long, a bulk head with five openings or sluice gates, 20 feet wide by 15 feet deep each, and a by-wash or waste-weir over a rocky ledge about 100 feet wide. The chamber wall of the lower lock on the westerly side, is bulged in very considerably, and looks dangerous. It has been in this condition ten or twelve years or more. It may do duty in its present condition for some time to come, but it is uncertain.

The dam has been raised and faced with stone this fall. The other works are in good order. While the canal was lowered in 1862, a large quantity of sunken timber got dry, and when the water was let in; it floated. This increased the ordinary quantity of drift-wood very much. During the flood last spring an unusual collection, several acres in extent, accumulated in the bay above this station, and came down in a body against the bulk-head. No damage occurred beyond the expense of the removal of the jam. Something more will have to be done here to keep back the flood wood and ice from the sluices.

BLACK RAPIDS.

At this station, which is four miles above Hogsback, there is one lock, one cut stone sluice, retaining dam, a wooden waste weir dam 300 feet long across the river, with a 20 feet sluice gate in it for drawing down the water. The masonry of the stone sluice is very shaky and out of repair. It is prevented from falling by timber work. The wooden dam was lately built in place of a stone one, which had become unservicable. There is a leak under the lower lock gate, which will necessitate the pumping of the lock. This, however, will not be expensive.

LONG ISLAND.

The principal works at this station are three locks combined, a curved stone retaining dam, 340 long and 30 feet high, a long earth retaining dam, crib work retaining dam at the foot of the island through this there are two sluice gates each 15 feet wide. One and a half miles above, at the White Horse Shoal, there is a guard dam, opposite to which, in the westerly channel, there is a bulk head with five 20 feet openings or sluice gates. There is no waste weir dam at this station. Considerable expense and danger are incurred every spring in passing the ice and flood wood through the sluices.

The reach above is 27 miles in length. Every precaution should, therefore, be used to prevent accidents. Several minor works have lately been constructed to prevent damage, viz: ice-breakers, piers, a boom, guard dam and an apron at the dam at the foot of the island.

The repairs required at this station are very considerable. The stones composing the two centre sills of the locks are very much broken, and should be rebuilt, the cost of which will perhaps be \$2,600. The upper stones have been bolted down so often, that they are all split to pieces. These sills might perhaps be repaired in a temporary manner by fastening timber over them to make them last a while longer; it will, however, be running some risk of failure.

BURRITT'S RAPIDS.

There is a side cut here upwards of a mile in length, one lock, one swing bridge, long retaining dams of earth, wooden waste weir, dam 200 feet long across the river, with sluice gate. The sheeting of the dam requires renewal; some gravel is also required.

NICHOLSON'S.

Two locks detached, stone waste weir, dam across the river, two sluice gates; the side cut is partly through rock, and the canal formed by a dry stone retaining wall, a portion of which, about 800 feet in length, is overhanging, and some of it will probably fall in the spring. It ought to be taken down and rebuilt, but it may possibly last a short time longer.

CLOWES.

One lock, cut stone sluice, curved stone waste weir, dam across the river 480 feet long; several small repairs are required, amongst which is a new bridge over the by-wash or sluice, and machinery for raising the stop logs.

MERRICKVILLE.

There are three locks at this station detached, but connected by masonry walls, enclosing small basins, one swing bridge, retaining embankments and a wooden waste weir dam 130 feet long across the river, with small sluice gates at each end of it. One of these sluice gates is unservicable and will have to be rebuilt. Some other repairs are required.

MAITLAND'S.

One lock of small variable lift, one swing bridge, embankments and low wooden dam lately built across the river.

During low water, trouble was formerly experienced here. A considerable quantity of water finds its way through some low lands called the break grounds, on the easterly side of the station, and about one and a half mile distant. The late Ordnance built dams here, but the inhabitants cut them down, as they flooded a large quantity of valuable meadow land, and was an obstruction to their fishing boats. Since the dam at the lock was rebuilt and made water-tight, there has been sufficient water for navigation.

EDMONDS.

One lock, cut stone sluice and waste weir, dam about 500 feet long, across the river! Some gravel and sundry small repairs are required here.

OLD SLY'S.

Two locks combined, one draw bridge, curved stone retaining dam, and wooden sluice. The masonry of the upper wing wall of the lock is in very bad order, and must be rebuilt the first opportunity that occurs.

The reach above this station has been much injured by the saw mill people and manufacturers of wood at Smith's Falls, allowing the saw dust and other refuse from their mills to fall into the canal until the navigation is almost destroyed.

SMITH'S FALLS.

At this station there are three locks combined, one swing bridge, long retaining embankments and wooden flat pressure dam with sluice gate. The basin above these locks has been made by raising the water upon a lime stone rock full of seams, and it is very leaky. Many ineffectual efforts were made by the late Ordnance to stop these leaks. In very dry seasons the water partially drains off; in this case a supply is let down from the station above to pass vessels. A quantity of gravel and sundry repairs are required here.

SMITH'S FALLS DETACHED.

One lock; retaining embankment and waste weir dam, composed of posts and struts with stop logs in front. The dam is very old, and portions of it break away occasionally, but it is easily patched up again. The lower gates require two new rails and the heel posts to be spliced.

POONAMALIE.

This is the outlet of Rideau Lake. The works here are a side cut over a mile in length, one lock, a retaining embankment, long low dam of posts and struts, with stop logs in front. A sluice gate for regulating the water was constructed here last summer, and a boom about 500 feet long for retaining the drift wood; this boom is old and decayed, and requires renewing.

The lower Rideau Lake, above this station, is 19½ miles long, and in one place seven or eight miles wide. It is the principal reservoir for supplying the navigation during dry weather, so that much depends upon the proper management of the water at this station. During the winter the water is drawn down as low as possible, and as much retained of the spring floods as the works will allow. The River Tay enters the lake at Pike Falls, about five miles above Poonamalie. There are quite a number of dams on this stream, constructed in a very poor and cheap manner—these dams retain in the aggregate a large quantity of water, and are frequently carried away during floods, thereby increasing the trouble on the canal.

NARROWS.

The station is at the outlet of the Upper Rideau Lake, which is the summit level of the Rideau Canal; it is reckoned to be 402 feet above the level of the sea, 292 feet above the level of the River Ottawa at this city, and 165 feet above the level of Lake Ontario. The works here are one lock, one long retaining dam and a small wooden sluice gate. The masonry of this lock is very shaky; one upper wing wall will have to be taken down and rebuilt. The gates also require some repairs. Piers are necessary here for vessels to fasten to, while waiting for the lock; one above the lock must be rebuilt, and the one below repaired. The supply of water to the summit level is of importance. There are several lakes connected together by creeks, upon which mills are built, extending from Bedford to the upper Rideau Lake, viz: Sand Lake, West Rideau Lake and Clear Lake. West Rideau Lake is about 2½ miles area, and pondage could be got here to the depth of four feet, it is believed, without doing much injury to private property, as the banks are high. The Ordnance did once construct for the purpose a dam at the outlet of West Rideau Lake, but the lumberers cut it down, and it has not been rebuilt since.

The water was lost at this level about seven years ago; the trade was then continued by transporting the goods and merchandise across the isthmus with waggons for about six weeks. This subject of additional pondage has been mooted, and the mill owners on the Rideau have memorialized the Department respecting it; the greatest trouble will be to avoid infringing private rights, as people keep a sharp look out for claims upon Government for damages either real or imaginary. It is intended to make some further examination during this winter on the ice in relation to this subject.

ISTHMUS.

This is the first lock downwards towards Kingston. There is one lock, a high wooden Queen post truss bridge with stone abutments lately built, and the rock cut through the dividing ridge about one and a half mile in length. This lock will require to be pumped to repair the gates and sills; it is proposed to make the dam at the entrance of the cut, so as to clear it from stones that have fallen into it from the banks.

CHAFFEY'S.

From Newboro', or Isthmus, the canal passes through Mud, Clear and Indian, or Opinocan Lakes, to Chaffey's Station.

The works are one lock, a cut-stone sluice connected therewith. New machinery for raising stop logs is required.

DAVIS.

From Chaffey's the canal passes through Davis Lake to Davis Station. There is one lock, retaining embankment, and wooden sluice gate built last winter. Repairs are required to the gates, which must be lifted; some of the posts have to be spliced.

JONES' FALLS.

From Davis the canal passes through Sand Lake, three miles to this station. The works here are extensive, and cost upwards of £80,000 sterling. There are four locks in all (overcoming a fall of 60 feet), three combined, and one detached, but connected by a basin; a dressed-stone curved retaining dam 60 feet high and 300 feet long; the waste water runs through an extensive cut in the rock, and is regulated by stop logs.

The repairs required are the renewal of two pairs of lock-gates, one for the lower gates of the lower lock, and one for the lower gates of the upper combined lock; a retaining wall at the basin connected with the wing wall of the combined locks, is overhanging, and should be taken down and re-built.

These lakes are not the Clear and Sand Lakes mentioned before; they had their outlet formerly down Whitefish Creek to Gananoque, but the water was raised by building a dam in the Whitefish Creek, in which there are two sluice gates, through which a portion of the surplus water passes, and the canal lowered when required.

BREWER'S UPPER MILLS.

This station is 11 miles from Jones' Falls, passing through Cranberry Lake. This was formerly an extensive swamp, but by raising the water it was converted into a lake

which connected the waters of the Gananoque and Cataragui. The works here are two locks combined, retaining dam, small sluice gate, and swing bridge; the latter will soon require renewing.

BREWER'S LOWER MILLS.

One and three-quarter miles below; one lock, retaining dam, wooden sluice. Sundry repairs required.

KINGSTON MILLS.

Ten and a half miles below Brewer's Mills, the canal passes through the channel of Cataragui Creek and lakes of drowned lands, to Kingston Mills Station. There are four locks (overcoming a fall of 45 feet), three combined and one detached, but connected together by a basin, a very long retaining dam on each side of the locks, a cut stone sluice gate, a swing-bridge, and a wooden bridge over the old channel 250 feet long on the public road.

The repairs required here are the renewal of a pair of gates for lower lock; facing portions of the long dam with stone, (this has to be done more or less every season, and will be until the whole is faced); repairs to swing-bridge, and sundry repairs to the locks and machinery. A sum of \$120 will have to be laid out for sheeting one-half of the long bridge and renewing the hand rail.

A macadamized road has lately been made to intersect the Whitefish macadamized road, which has brought a large amount of travel over this bridge, for which the road company received tolls. The road company ought to do something to keep the bridge in repair, or take it altogether, if an accident should occur the Government will, I suppose, now be responsible.

The tolls received during the past season amount to \$8,242.38. The number of lockages at Kingston Mills has been 3120—being 2928 for vessels, and 192 for rafts. At Ottawa, the number of lockages were 744 for vessels, and 396 for rafts—total 1140.

I have the honor to be, sir,

Your obedient servant,

(Signed)

JAMES D. SLATER,

Supt.

Ottawa, 9th January, 1864.

RIDEAU CANAL

STATEMENT showing cost of Maintaining Navigation from 1858 to 1863 inclusive.

	1858	1859	1860	1861	1862	1863.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Lockmasters and lock laborers	14655 86	13550 90	11887 20	11926 10	12087 70	12764 80
Office establishment and management	5648 70	4984 78	4413 34	4378 24	4882 06	4297 28
Ordinary repairs and incidental expenses	3681 74	4180 52	4402 30	2892 40	6010 04	4421 37
<i>Permanent Works and Construction</i>						
Long Island dam and bulkhead	20044 15	3132 44				
Smith's Falls do do			1758 63			
Harbors—bridge re-built			1410 53			
Black Rapids—sill of lock re-built				948 95		
Long Island—new apron below dam				392 05		
do guard dam White Horse Shoals				500 26		
Barritt's Rapids—breach in embankment				8361 47		
Brewer's lower mills—casual of lock re-built, and new floor				28242 91		
Hogback—dam and bulkhead re-built				5143 37		
Black Rapids—new dam				1886 02		
Hogback—Hartwell & Edwards, 3 pairs lock gates						1292 94
Kingston Mills—Brewer's Upper Mills, 2 do do						556 00
Old Sly's—new bulkhead						400 00
Peconic—new bulkhead						
Totals	\$44021 45	24848 64	23962 04	29324 43	57852 00	28231 99

RIDEAU CANAL.
SUMMARY OF REPAIRS FOR 1864.

STATIONS.	Amount.	Remarks.
	\$ cts.	
Ottawa, first eight Locks.....	528 60	
Hartwell's	73 40	
Hogsback	178 77	
Black Rapids	312 52	
Long Island	2,980 30	Includes two new sills.
Burritt's Rapids	178 60	
Nicholson's.....	1,125 15	Includes rebuilding dry stone wall.
Clowes Quarry	444 62	
Merrickville.....	308 70	Includes new bulk head.
Do.	170 58	
Maitland's	91 00	
Edmond's.....	202 60	
Old Sly's	277 20	Re-building wing wall.
Smith's Falls, combined	327 16	
Do do., detached	153 97	
Poonamalie	136 40	New boom.
Narrows	795 80	
Isthmus	377 50	
Chaffey's	224 49	
Davis'	165 99	
Jones' Falls.....	981 62	Re-building retaining wall.
Brewer's Upper Mills.....	90 52	
Do Lower Mills	406 66	
Kingston Mills.....	585 78	
	\$11,117 93	
Six pairs new Lock Gates	4,800 00	
Contingencies.....	400 00	
Total.....	\$16,317 93	

Repairs alluded to in Report which may possibly last another season, viz :

	\$ cts.		
Ottawa, two pairs Lock Gates.....	1,600 00	Summary of repairs	
Hartwell's, one " "	800 00	and works brought	
Long Island, two new Sills.....	2,593 50	forward.....	\$16,317 93
Nicholson's, re-building dry Stone Wall	932 00		
Old Sly's, " Wing Wall....	215 00		
Jones' Falls, " " "	400 00		
Kingston Mills, one pair Lock Gates...	800 00		
Contingencies	200 00		
			7,540 50
Balance required to put the Canal in navigable order			\$8,777 43

APPENDIX B.

OTTAWA WORKS, SUPERINTENDENT'S OFFICE,
OTTAWA, 26th December, 1863.

SIR,—I have the honor to acknowledge the receipt of your communication, No 47,920, of the 4th inst., requesting me to send to the Department, as early as possible, my annual report on the state of the works under my charge.

For the information of the Hon. the Commissioner, I would state that the riverworks on the Ottawa and its tributaries were little damaged by either the shoving of the ice or the spring floods; one of the support-piers of the Gatineau boom and a snubbing-pier in the Chats Lake, immediately above the rapids, were somewhat damaged, but not so much as to render them altogether useless for the purposes of the lumbermen. I should also add that certain portions of two dams on the north branch of the Petawawa River were destroyed by fire. In reporting on the works in detail, I will commence with those at the upper station on the main river, viz :—

JOACHIM.

The improvements at this station are nearly worn out and will require the following repairs:—

500 feet of 5-inch plank for dam on the south side of slide, say 2,500 feet B.M. of pine plank, say \$14 per M.....	\$ 35.00
Four new timbers 40 feet long, 16" × 16" —284 cubic feet, for repairing guide-boom leading from the foot of the upper slide to the head of long slide, @ 15c. per foot.. ..	42.60
The bulk head of the long slide will have to be renewed. I have estimated the cost of removing the old materials and substituting new posts, caps, platform, railing and stairs, and of mounting the crab machinery, @	186.00
Four new stop logs for bulkhead, 28 feet long, 14" × 14"—152 cubic feet @ 16c.....	24.32
	<u>\$287.92</u>

CALUMET STATION.

The repairs required will consist of the renewal of the windlass and some of the oak binders for the large guide-boom, at a cost of about.....	8.00
New roadway planking for the bridge over the canal, 51 ft × 18 ft × 4 in: and a few outside braces, requiring in all 4,000 feet B.M. of white pine, @ \$12 per M.....	48.00
Two new stop logs, 78 feet, @ 12c	9.36
Removing a quantity of loose stones from the bed of the canal.....	5.00
Two new stop logs for 2nd bulkhead, 78 feet, @ 12.....	9.36
300 cubic feet of white pine timber to replace bulkhead posts and caps decayed, @ 12c.....	36.00
Planking for bulkhead 32 ft. × 12 ft. × 3 in.—1,152 feet B.M., @ \$12 per M.....	13.82
Two new stop logs for head of long slide, 78 feet, @ 12c.....	9.36
Pine planking for bottom of slide, 1,500 feet B.M., @ \$12.....	18.00
Oak " " " 15 ft. × 6 ft. × 4 in.—1,080 feet B.M., @ \$24 per M.	25.92
Oak planking apron at foot of long slide—1,400 feet B.M., @ \$24 per M	33.60
Repairs for platform and stairs of lower slide.....	2.50
	<u>\$218.92</u>

MOUNTAIN STATION.

The works there are in comparatively good order. A short stay-boom 50 feet long, made of double timber, will be required for the head of the slide, say 100 feet, @ 15c..... 15.00

One chain hook for upper bulkhead..... 1.50

Four white pine stop logs 28 ft. x 14 ft. x 14 in—152 feet @ 15c... 22.80

1,444 feet B. M. oak plank, @ \$30 per M..... 43.32

300 cubic feet of red pine for side of long slide, @ 15c..... 45.00

Filling guard-pier with stone where the stone filling has settled, 300 cubic yards, @ 60c..... 180.00

\$307.62

PORTAGE-DU-FORT STATION.

The outlay at this place will be small; some facing plank for the slide at the bulkhead, repairing stairs and platform, furnishing new stop log and patching the slide floor, will cost..... \$30.00

CHENEAUX STATION.

The retaining booms and works in connection therewith are in good order, with the exception of the platform, which has become water-logged, and a crab that was broken last summer. I would recommend that a cheap flat-bottomed scow be substituted for the platform; it would be very useful for stretching and taking in the booms, besides supporting the crab required to open the "trip" boom to admit of the passage of steamers and rafts of square timber.

I have estimated the cost of a scow, 80 feet long 12 feet wide and 24 inches deep at \$100.00

Strong crab to be placed in scow..... 40.00

\$140.00

HEAD OF CHATS RAPIDS.

One of the piers at that station was considerably damaged by the moving of the ice from Chats Lake last spring; and as the lumbermen snub their rafts at this point, preparatory to running small bands of cribs through the rapids, it is very desirable that the pier referred to, should be repaired and strengthened. I propose to put an addition to it of 21 ft x 20 ft. x 20 ft., which will require of timber 1,800 cubic feet (white pine), @ 12½c..... \$225.00

Stone filling 18 ft. x 18 ft. x 21 ft—252 cubic yards, less space occupied by ties, 11 yards, say 241 cubic yards @ 60c..... 144.60

Iron spikes, 450 lbs, @ 8c.... 36.00

\$405.60

CHATS STATION.

The slide at this place passes more timber than any other on the Ottawa, as in addition to the rafts from above the Calumet, those from the Bonnechère, Madawaska and Mississippi rivers are taken through the Chats slide, there being no other opportunity of dividing the traffic between the north and south sides of the river, as at the Chaudière Falls. The fall is about 40 feet, so that the friction of the cribs on the bottom planking is very great; and as the floor of the slide is worn thin, I propose that it should be renewed. For this purpose 6,000 feet of pine plank 5 inches thick will be required—30,000 feet B. M., @ \$15 per M..... \$450.00

White pine timber for apron, say 1,000 cubic feet, @ 15c..... 150.00

Two pieces boom timber, 200 cubic feet, @ 15c..... 30.00

\$630.00

LITTLE CHAUDIÈRE STATION.

The works at this station, consisting of a slide, long pier dam, from head of slide to the island, long wing flat dam, from the head of the island to the head of the rapids, and the guide boom and piers are all in good order and require no repairs. The same remarks are applicable to the Remous boom and piers in the immediate neighborhood.

HULL (NORTH CHAUDIÈRE) STATION.

The main slide (which was reconstructed two years ago) the wing dam at the head, the slide from the lower basin and the guide booms and piers leading to the slides, will be available for next year's business without repairs.

OTTAWA (SOUTH CHAUDIÈRE) STATION.

Having been authorized by the Hon. the Commissioner to execute certain repairs on the four slides at this station and the toll house at the Union Suspension Bridge, at an expense of about \$450, I would state that the work has been well advanced by the slide employees, and when completed everything will be ready for use in the spring.

The long line of booms and support-piers at the head of the slides, the dam and bulk-head extending from the head of Chaudière Island to Russell Island, the bulk-head in Buchanan channel and the dams connected with the water privileges at this station require no repairs.

UNION SUSPENSION BRIDGE.

Both courses of road-way planking are worn out; the lower tier is white pine three inches thick, and the upper one oak, two inches thick. The latter is exposed to the great tear and wear caused by the Upper Ottawa traffic, while the pine or lower sheeting rots speedily from the effects of the spray from the Chaudière Falls. I would, therefore, recommend that cedar planking be substituted for pine, as being lighter and more durable, and that black ash be laid on the surface instead of oak, which is scarce and expensive in this part of the country; but, before the change is made, I would suggest that the Deputy Commissioner or Chief Engineer of the Department should be consulted on the subject. The following is an estimate of the cost of the repairs:—

Cedar plank 246 ft. \times 18 ft. \times 3 in.—1,3284 feet B.M., @ \$15 per	
M.....	\$199.26
Ash plank 246 ft \times 18 ft. \times 2 in—8,856 feet @ \$13.....	115.13
Expense of stripping the bridge and laying both courses of planking...	50.00
“ “ spikes for planking.....	16.00
	<hr/>
	\$380.39

These repairs should be executed during the winter months, so that the traffic may be accommodated at a crossing on the ice opposite this city.

THE LINE OF WOODEN BRIDGES,

Forming the southern approach to the Union Suspension Bridge, having been repaired lately, may be used another year. The wooden bridge over the Hull side channel requires no repairs. Pooley's bridge is in good order. In former reports—for reasons therein set forth—I recommended that this bridge be handed over to the corporation of this city. I would now respectfully repeat that recommendation.

CARILLON DAMS.

The water in the Ottawa River was lower last season than it has been since 1846, and the consequence was, at this station, that several boulders were found to be in the way of the timber. In winter the channel between the long dam and the shore is generally blocked up with ice to the exclusion of water. Should such be the case this winter, I would recommend that these boulders be removed, as the work can be done without going to the expense of constructing a coffer-dam. I have estimated the cost at... \$50.00.

TRIBUTARIES OF THE OTTAWA.—I. DU MOINE RIVER.

A detailed list of the works on this stream will be found under the head of new works. These improvements were completed last spring, and have given general satisfaction to the lumbermen on the river. A mooring chain should be provided for the boom at the mouth of the river, to take the place of one now in use, belonging to a firm connected with the Du Moine. The cost of a suitable $\frac{3}{4}$ inch chain laid down at the works will be about..... \$50.00.

II.—PETEWAWA RIVER.

On the north branch of this stream improvements have been extended to a point about six miles above Lake Traverse. In this section of the country, which is very rough, the works consist of a dam and slide at High Falls, twelve dams and glance piers within a distance of six miles, and a retaining boom at Lake Traverse. These improvements were carried out two years ago and are in good order, with the exception of two dams that were partially destroyed by fire last summer. One of these dams, a very necessary work, is situated at McDonald's Chute. The following is an estimate of the cost of the repairs:—

White pine timber, 1,728 cubic feet, @ 14c (for upper dam).....	\$241.92
“ “ “ 564 “ “ “ “ (“ lower”)	78.96
Planking for both dams, 18,520 feet B.M., @ \$13 per M.....	240.76
Spikes, 600 lb, @ 9c.....	54.00
	<hr/>
	\$615.64

The improvements at *Crooked Chute* and *Half Mile Rapids* require no repairs. On the south branch of the river the improvements consist of six single stick slides. The slide at Brigham's Chute is now old and dilapidated; its lower end for a distance of 150 feet will have to be renewed at a cost of \$1.50 per lineal foot..... 225.00

\$840.64

On the *Main River* the large retaining boom, support piers, dam and slide at the *Boudure station* are in good order and require no repairs; this may also be said of the long slide, dam and boom at the *Third Chute*; the long dam, slide, booms and support-piers at the *Second Chute*; the dam, slide, boom and support piers at the *First Chute*; and also the long retaining boom and support-piers at the mouth of the river.

III.—MADAWASKA RIVER.

The following works on this important tributary of the Ottawa require no repairs that would render an appropriation for that purpose necessary, viz:—The slide, retaining booms and piers at *Chain Rapids*; dams at *Bailey's Ducks* and *Boniface Rapids*; dams and piers at *Ragged Chute*; main dam, guide boom, support-piers and long slide at *High Falls*; large retaining boom and support-piers in *Calabogie Lake*; the glance-pier at *Balmer's Island*; and the two dams at *Long* and *Flat Rapids*.

The boom at Burnstown was broken last spring and a portion of it displaced. As there is a swift current to be contended with, I have estimated the cost of placing the boom at..... \$ 20.00

At *Arnprior station*, one end of the retaining boom has hitherto been moored to the stump of a pine tree. This mode of fastening is not reliable, the more especially as the tree is decaying. I would, therefore, suggest that a mooring pier 12 ft. x 12 ft. + 7 ft high should be built; the materials required will be 432 cubic feet of white pine, @ 12c..... 51.84

Stone filling 23 cubic yards, @ 65c..... 14.95

The guide block that holds the mooring oak picket, and three courses of crib-work must be renewed at a cost of, say..... 40.00

At the foot of the *Arnprior Slide* there is a reef which causes the timber to jam; 25 cubic yards of rock should be blasted off, at \$1.60 per yard 37.50

Repairing facing plank of support-piers in lake.....	10.50
Renewing 50 feet of (double) spur boom at the head of slide, say 100 lineal feet of white pine timber, 15 in. \times 15 in.—156 cubic feet, @ 14c...	21.84
	<hr/>
	\$196.63

IV.—GATINEAU RIVER.

As the quantity of timber taken from this river is annually on the increase, a due regard to the interest of the lumber trade renders it imperative that the upper portion of the large retaining boom, where it is single, should be strengthened. About two years ago the lower section was converted into six ply boom for a distance of 1,510 feet, and it is probably stronger than any similar structure in the country. It is now proposed to remove the decayed single timbers from the upper end of the boom for a distance of 710 feet, and substitute new double timbers 15 in. \times 15 in. for them. For this purpose 2,219 cubic feet of white pine timber will be required, which will cost, when laid in the boom and prepared to receive the chains and necessary fastenings, 20c per foot.....

54 screw bolts 34 inches long, 1 $\frac{1}{2}$ inch. round iron, 880 lbs, @ 10c...	\$448.80
108 cast iron washers, 3 lbs each—324 lbs, @ 5c.....	83.00
18 strong iron clevises for skein chains, @ \$1.50.....	16.20
	27.00

There is in the storehouse at this station a chain cable from which the skein chains can be made, but the cost of cutting them off, and putting larger end links in, will be, say 18 skein chain, with two links each, 36 links @, 50c.

18.00

The upper mooring pier was damaged by the ice last spring; that portion of it commencing at the top, for a depth of 14 feet, must be removed and reconstructed. 1,120 cubic feet of white pine timber should be provided, @, 12c.....

140.00

101 cubic yards of stone filling, @ 50c.....

50.50

\$778.50

The wooden bridge over the canal, leading from the river to the pond, was built two years ago and requires no repairs.

NEW WORKS COMPLETED AND IN PROGRESS IN 1863.

The *Du Moine* improvements were completed last spring, and consist of a flat dam at the head of *Long Rapids*, 45 miles from the mouth of the river; a flat dam, two wing piers, three support-piers, guide-boom and reconstruction of the "Moffat" slide at "High Falls," 16 miles from the mouth; a flat dam half a mile below *High Falls*; a flat dam one mile below do; two flat dams and extension of Moffat pier one mile and 60 rods below do; a side flat dam at the outlet of *Robinson's Lake*; a flat dam at *Patton's Chute*; a side dam and certain rock excavation at *Trois Roches*; a flat dam at *Ryan's Chute No. 1*; two flat dams at *Ryan's Chute No. 2*; a flat dam at *Ryan's Chute No 3*; two slide dams near mouth of river, and support-pier and retaining boom at mouth of river.

At a short distance below *Portage-du-Fort* station, an obstruction known as "Black Rock" was removed from the crib channel. The excavation was done last winter, and it has had a good effect on the running of timber.

The rock excavation, in connection with the deepening of the channel leading to the *Little Chauvière* slide, was put under contract at the season of low water, but the contractor failed to complete the work within the time specified. The sureties were then called upon in terms of their bond, and they prosecuted the work vigorously, until their workmen were compelled to leave the reef by the flood in the river, occasioned by the heavy fall rains. The work is well advanced, however, and it is hoped that it will be completed in March 1864.

In asking for an appropriation for the repairs of the works under my charge, I would state that the estimates have been kept as low as possible, and it cannot fail to be satisfactory to the Hon. the Commissioner to know that so small an amount as that shown by the annexed recapitulation will cover the cost of the necessary repairs. An idea may be formed of the importance of these works to the Ottawa lumber trade, by a glance at the following figures:—

Year 1863—Square timber passed Chaudière slides, 16,821 cribs,
 equal to..... 351,255 pieces.
 Saw-logs from the Upper Ottawa arrived at Chaudière, about.... 120,000 "
 " " " " " Gatineau River..... 222,184 "

The tolls payable to the Government for the use of the Public Works in passing the above timber, amounted to over (\$50,000) *fifty thousand dollars*.

In respectfully submitting the above,

I have the honor to be, sir,

Your most obedient servant,

(Signed) HORACE MERRILL,
 Supt. of Ottawa Works.

RECAPITULATION.

Estimated cost of repairs at	Joachim....	\$287.92
" " "	Calumet.....	218.92
" " "	Mountain.....	307.62
" " "	Portage du-Fort.....	30.00
" " "	Cheneaux.....	140.00
" " "	Head of Chats Rapids.....	405.60
" " "	Chats.....	630.00
" " "	Union Suspension Bridge.....	380.39
" " "	Carillon Dams.....	50.00
" " "	Du Moine River	50.00
" " "	Petewawa River.....	840.64
" " "	Madawaska River.....	196.63
" " "	Gatineau River.....	778.50

\$4,316.22

Add for cost of inspection, as the works are hundreds of miles apart 600.00

Total cost of repairs..... \$4,916.22

OTTAWA WORKS.—PERMANENT STAFF.

1. Horace Merrill, Superintendent of Ottawa Works.
2. David Scott, Clerk of Ottawa Works.
3. Duncan Graham (Collector of Customs, Ottawa), Paymaster.
4. George Johnson, Messenger, Superintendent's office.
5. Hiram Crosby, Dy. Slide Master, River du Moine.
6. Moses Holt, senr., " " Joachim Station.
7. James Rowan, " " Petewawa River.
8. Duncan Carmichael, " " Calumet Station.

9. Walter Thomson, Slide Master, Mountain Station.
10. James McLaren, " " Portage-du-Fort Station.
11. James Barry, " " High Falls Station (Madawaska).
12. Duncan Macfarlane, " " Chats Station.
13. John Macdonald, " " Chaudière Station.

II.

Men occasionally employed on the Ottawa Works during the running season, in addition to the regular staff:—

		DAYS' WORK.	
Petewawa River.....	8 laborers employed on slides about 3 months.....	624	
Calumet Station.. ...	1 laborer " " " 4 "	104	
Cheneaux Boom.....	1 boom-keeper " " " 4 "	104	
High Falls Station...	6 slide laborers " " " 8 "	468	
Arnprior Station...	1 acting deputy slide master about 4½ "	117	
" "	1 slide laborer " " 2½ "	65	
Chats "	1 " " " 4½ "	117	
Chaudière "	2 assistants on slide " 6 "	312	
Hull "	1 acting dep'y slide master " 5 "	130	
Gatineau Boom.....	2 men " 7 "	364	
" "	2 men " 8 "	150	
Carillon Falls	1 acting dep'y slide master " 5 "	130	
Ottawa Works.. ...	1 foreman on booms " 7 "	182	
28. Total days' work of men.....		2,873	

OTTAWA, 25th Jan, 1864.

The above is a true statement, to the best of my knowledge and belief.

(Signed) D. SCOTT,
Clerk of the Ottawa Works.

APPENDIX F.

SUPERINTENDENT'S OFFICE, ST. MAURICE WORKS,
THREE RIVERS, 14th December, 1863.

SIR,—In compliance with your instructions of the 4th instant, I beg to submit my annual report on the state of the St. Maurice River Works for 1863.

During the season now closed the St. Maurice works have been carried on with much success, giving, I believe, entire satisfaction, so far as the management of the works were concerned, to every lumber merchant upon the river. With the exception of one piece of boom, which was broken at Shawanegan, but which occasioned no loss of lumber, no accident has occurred during the year.

About the usual amount of business has been done upon the river during the past season. There will, however, probably be a material increase during the coming year, in consequence of the American mills at this place, which have been idle for the past six years, going again into operation.

The repairs recommended by me on the 27th July, 1863, and authorised by the department on the 15th September, have been made within the amount named in my approximate estimate.

It may be seen by reference to my letter of the 27th July, above mentioned, that two small anchor piers and a scow for LaTuque, and one anchor pier and a scow for Shawanegan will be required before the opening of navigation next spring. Probable cost, \$400.

It will be noticed that the cost of repairs increases from year to year. This will occasion no surprise when it is considered that there are 43,181 lineal feet of expensive booms, 131 piers, 2,841 feet of side dams and 1,000 feet of slides, most of which are now about 12 years old.

The cost of repairs for the last four years has been as follows:—

Repairs, 1860	\$ 837.91
Do. 1861.....	850 44
Do. 1862.	1,432.48
Do. 1863.....	1,511.50

The cost of maintenance for several years past has varied but little. The following statement shows the expenditure for the past seven years:—

Maintenance, 1857.....	\$11,870.00
Do. 1858.....	7,648 07
Do. 1859.....	7,234.54
Do. 1860.....	6,868.58
Do. 1861.....	6,603.05
Do. 1862.....	7,328.56
Do. 1863.....	6,888 40

In my annual report for 1861 I represented to the department the necessity of building a small stone house (hangard) on the island lately purchased from Lambert, for the purpose of securing our ropes, chains and other material. The one now in use is situated nearly a mile from the main booms, in an out-of-the-way place. It was broken open last winter and some articles stolen therefrom. It is covered only with boards, and leaks so badly as to injure the ropes, &c, very much. A new one can be made for £50; I would strongly recommend the expenditure.

The amounts asked for in this report are, therefore, as follows:—

Anchor piers and scows.....	\$400.00
Stone house at mouth....	200.00
	<hr/>
	\$600.00

The lumber trade on the St. Maurice is retarded to a very great extent in consequence of the inaccessibility of the timber. Those limits bordering upon the main river have been worked so long that they begin to show signs of exhaustion; while to penetrate the interior by the way of the tributaries so many obstacles present themselves as nearly to amount to a prohibition. I am of the opinion that were some of the larger tributaries, such as the Mattawa, Vermillon and Bostonais improved, it would be a great boon to the trade, and ultimately be a source of revenue to the Province.

I have the honor to be, sir,

Your obedient servant,

(Signed),

HENRY R. SYMMES,

Supt.

T. TAUDEAU, Esq.,

Secy. Dept. Public Works, Quebec.

STATEMENT OF THE NUMBER OF MEN

Employed occasionally on the St. Maurice Works during the Running Season, taking in Booms, &c., with amount of Wages paid for 1863
Men boarding themselves.

STATIONS.	No. of days' work. Jan. '63.	No. of days' work. Feb. '63.	No. of days' work. Mar. '63.	No. of days' work. Apl. '63.	No. of days' work. May '63.	No. of days' work. June '63.	No. of days' work. July '63.	No. of days' work. Aug. '63.	No. of days' work. Sep. '63.	No. of days' work. Oct. '63.	No. of days' work. Nov. '63.	No. of days' work. Dec. '63.	Total days' work. 1863.	Total Wages, 1863.	Average price per day.
Month of River.....	2	.....	23	72½	363½	196	121½	52	52	82½	.....	.....	965½	706 05	
Grés Falls. ....	.....	.....	.....	.....	53½	23	.....	.....	.....	.....	.....	.....	76½	74 85	
Shawenegan	7	.....	.....	117½	469½	252½	82½	3	151	.....	.....	11	1094½	1086 81	
Grande Meré.....	.....	.....	.....	29	225	50	.....	13½	23	.....	.....	.....	340½	326 96	
La Tuque.....	.....	.....	.....	.....	260	74½	.....	.....	.....	.....	.....	.....	334½	311 96	89 cents.
	9	.....	23	218½	1851½	596½	204½	68½	226	82½	.....	11	2811	2506 63	89 cents.

The number of days' work above given is equal to nine (9) men permanently employed, or about 1½ men to each Station.

(Signed) HENRY R. SYMMES,
Superintendent.

THREE RIVERS,
January 25th, 1863.

LIST OF PERMANENT OFFICERS

Employed on the Saint Maurice Works, and the amount of their Salaries for the year 1863.

Stations.	Names.	Occupations.	Salaries.	Remarks.
Office	H. R. Symmes.....	Superintendent.....	\$1400 per year..	
Do	F. Hughes.....	Messenger.....	\$15 per month..	Left.
Mouth of River.....	J. B. Normand.....	Deputy Boom Master.....	\$2 per day.....	
Grès Falls... ..	Francis Rousseau...	Deputy Boom and Slide Master..	\$2 per day.....	
Shawenogan Hêtres.....	Arthur Rousseau....	Assistant do do	\$432 per year...	
Grande Mere.....	Aléxis Lattreille...	Boom Keeper.....	\$1 per day.....	
La Tuque.....	Joseph Blondin.....	Do do	\$1 per day.....	

(Signed)

HENRY R. SYMMES,
Superintendent.

THREE RIVERS,
January 25th, 1864.

APPENDIX G.

REPORT OF THE SUPERINTENDENT OF THE METAPEDIAC ROAD.

(Translation.)

QUEBEC, 22nd Jan., 1864.

T. TRUDEAU, Esq, Secretary,
Department of Public Works, Quebec.

SIR,—In answer to your letter of the 20th instant, in which you request me to report on the possibility of making use of the Kempt road for the central division of the Metapediac road, instead of constructing a new road, as proposed.

I have the honor to report that by making improvements on the Kempt road it might be adopted for the central division of the Metapediac road, but the portion thus used will always be inferior to the north and south divisions of the road, especially as regards level, owing to the fact that many of the numerous hills which are found on it have a grade of one in four; the others generally of one in six or eight, whereas on the north and south divisions the steepest grade is one in ten.

If the Kempt road be adopted for the central division the improvements to be made will cost \$17,252, as follows:—

27½ miles at \$450 per mile.....	\$12,262
One bridge in the St. Pierre River.....	1,500
One “ “ Metapediac River.....	3,500

Total \$17,262

In my humble opinion it would be more advantageous for the Department to have the central division made similar to the north and south divisions, adopting the new line proposed; because, after the expenditure of the above mentioned sums on this portion of the road, it will, owing to its position, require repairs almost every season, and after some years will have cost as much as the other portions of the road, and will be much inferior to them in every respect.

I think it my duty to add that the Kempt road appears never to have been formed like an ordinary road. The timber was only cleared 12 to 16 feet wide, and the ground levelled, hence the centre of the road, being 12 to 15 inches lower than the sides, acts as a ditch.

Humbly submitted.

I have the honor to be, sir,

Your very humble servant,

(Signed) JOSEPH ROSA,
Supt. Metapedia Road.

APPENDIX H.

ST. FLAVIE, 30th December, 1863.

T. TROUDEAU, Esq, Secretary,
Department of Public Works, Quebec.

Sir,—In compliance with your letter of instructions of the 4th instant, I have the honor to submit the following annual report on the works under my charge for the year ending the 31st Dec., 1863.

METAPEDIAC ROAD.

The works accomplished on the northern, central and southern divisions of this road during the year 1863, are as follows:—

NORTHERN DIVISION.

Five miles of road, under contract, completed. A truss bridge 271 feet long, 18½ feet wide, comprising three spans of 50 feet each, constructed over the River Metis.

Some portions of the road repaired.

All the work given out by contract on this division has been completed, with the exception of two sections of about seven arpents each, which only require more crowning, and for which a sufficient drawback has been retained to ensure their completion next spring within the contract price.

The total length of new road now completed in this division is about 25½ miles.

There still remains 7½ miles of road to be made through forest and a bridge to be constructed over the "Riviere Blanche," to complete the last link unfinished between the River St. Lawrence and Lake Metapediae. The construction of these 7½ miles will be a great boon to the traveling public, as this part of the old Kempt road which they are now obliged to use, is very hilly and rough.

CENTRAL DIVISION.

The two bridges of round cedar timber which were given out by contract last year have been completed. No other work can be done on this division until the line is located.

SOUTHERN DIVISION.

This division of the road is passable throughout, and has been used this year by the mail courriers and all travellers to and from Ristigouche.

A truss bridge over the River Assetmatquagan, a bridge of round cedar timber over the "Tric Islands Guleh," and 57 sections, making in all about 15½ miles of road under contract, have been completed this year.

There still remains 34 sections, forming an aggregate length of about $8\frac{1}{2}$ miles unfinished; 16 of these lots have been abandoned by their respective contractors, of which seven lots have been given out by private contract, and the remaining nine will also have to be completed next year at an advance on the original contract price.

The total length of road comprised in this division from the forks of the River Metapediac to the residence of James Sillars, Esq., on the River Ristigouche, is about $38\frac{1}{2}$ miles; of this distance $13\frac{1}{2}$ miles were commenced and nearly completed under Mr. Lefebvre's superintendence, and the remaining 25 miles were given out by contract last year.

KEMPT ROAD.

The temporary repairs of the Kempt road, which were commenced last year, have been completed, and the flooring of the bridges over the Rivers Metapediac and Causapscaal repaired.

The following statement of the amount expended during this year does not include the amount expended on the southern division of the road last spring, while under Mr. Lefebvre's superintendence.

Total amount expended on the Metapediac road during the year 1863 :

NORTHERN DIVISION.

Cost of repairing portions of the road, including the replacing of a burnt bridge, by a large culvert and embankment.....	\$84.37	
Amount paid on contracts given out last year.....	6,074.52	
Amount paid to contractors for extra work.....	8 50	
		<hr/> \$6,167.39

CENTRAL DIVISION.

Paid balance due on contracts for two bridges completed this year.....	\$140.07	
		<hr/> 140.07

SOUTHERN DIVISION.

Cost of repairing portions of the road.....	\$48.00	
Amount paid on the contracts given out.....	20,032.60	
Amount paid contractors for extra work.....	723.14	
		<hr/> 20,803.74

KEMPT ROAD.

Paid balance due on contracts for repairing portions of road, and for building a pier under the Causapscaal Bridge	\$181 71	
Paid for repairing bridges over the Rivers Metapediac and Causapscaal.....	81.50	
		<hr/> 263 21

METAPEDIAC AND KEMPT ROAD.

Cost of superintendence, general and incidental expenses, &c., up to 31st December, 1863.....	\$3,646 66	
Cost of outfit for the survey of the road.....	66.55	
		<hr/> 3,713 21
Total expenditure.....		<hr/> \$31,087.62

Estimate of the probable amount required to complete the *Metapediac Road*, and to pay the balances due on existing contracts :—

NORTHERN DIVISION.

Balance due on existing contracts.....	\$70.39	
Making 7½ miles of road through forest @ \$1,100 per mile.....	8,525.00	
A bridge over the "River Blanche".....	2,200.00	
Repairing portions of road made in 1860-'61, and completing portions made by day's labor last year.....	500.00	
		<u>11,295.39</u>

CENTRAL DIVISION.

Constructing 27½ miles of road @ \$1,000 per mile	\$27,250.00	
A truss bridge over the "River St. Pierre".....	2,000.00	
" " " Metapediac.....	3,500.00	
		<u>32,750.00</u>

SOUTHERN DIVISION.

Balance due on existing contracts.....	\$3,305.05	
Probable amounts required to complete the remaining lots abandoned by the original contractors.....	816.00	
A truss bridge over the River Causapscal.....	3,000.00	
Making hand-railing, culverts, widening and repairing the road made in 1858-'59-'60-'61....	6,000.00	
		<u>13,121.05</u>

Total amount required to complete the road, including superintendence, &c.....	<u>\$57,166.44</u>
--	--------------------

I beg leave to refer you to my letter to your Department, dated the 20th November, 1863, enclosing a statement showing the number of persons employed on the works this year, the salary paid to each, and the nature of their duties; and to inform you that the cost of superintendence would have been much less, and the service would have been more efficiently performed had I been allowed to choose my own assistants; as, when employes are appointed directly by the department, or through the influence of the member for the county, they generally feel quite independent of the superintendent, and do not pay a due regard to his orders.

MATANE AND CAP CHATTE ROAD.

In accordance with a letter of instructions from the Department, dated the 21st October, 1863, authorizing me to expend one thousand dollars in repairing the Matane and Cap Chatte road; the work of securing the pier supporting the bridge over the Rivière du "Grand Mechin" was commenced on the 26th of October, and completed in November, but owing to the lateness of the season only a few of the worst portions of the road were repaired.

In the beginning of this month (December) I set men at work to get out the necessary timber for the construction of a bridge over the "Ruisseau à Sem;" this bridge will be about 200 feet long and 38 feet high, and, when finished, will avoid two very dangerous hills.

There still remains about ten miles of road to be repaired, and a bridge to be constructed over the "Ruisseau à la Wapper." The banks of this stream are steep and dangerous, and a bridge is very much wanted.

The amount required to build this bridge and to repair the ten miles of road next summer will be about \$1,725.

TEMISCOUATA ROAD.

No work has been done on this road to my knowledge during the year 1863.

There still remains 1½ miles of road to be completed, and serious repairs are necessary in a great many places

I have the honor to be, sir,

Your most obedient servant,

(Signed)

JOSEPH ROSA,
Supt.

APPENDIX I.

STATEMENT shewing the result of the proceedings before the Official Arbitrators in 1863.

Claims awarded on	Subject of Claim.	When referred.	Amount claimed.	Amount awarded.	With or without costs.	Date of award.
Benjm. Brewster.....	Land taken for a slide on the Ottawa.....	1861 Jan. 21....	\$ 6000 00	\$ 520 00	without	1863 Nov. 16...
Ignace G. Gagnon.....	Extra work, &c.—Contract for Saguenay Works.....	Oct. 19....	10885 90	3078 00	with	do 12...
Edward Slewin.....	Do Jail and Court House, Magdalen Islands.....	1863 March 16....	2604 00	1685 00	do	do 8...
Quebec Gas Co.....	Gas used in Legislative Council building during the period of its occupation by H. E. the Governor General.....	Oct. 15....	1252 00	744 00	without	do 17...
CLAIMS STILL PENDING.						
Charles Peters	Extra work—Jail and Court House, St. Hyacinthe.....	1863 Feb. 20....	13473 00			
Wm. P. Bartley.....	Offset against rent—Hydraulic Lots Lachine canal.....	March 17....	.....		
Ira Gould.....	Compensation—Water withheld and land taken, &c, Lachine Canal.....	April 20....	39962 00			
CLAIMS STRUCK OFF THE ROLL.						
Denis Maguire.....	Supplies to Government Steamers.....	1861 Oct. 19....	130 30	claim	withdrawn.	

G. TUDOR PEMBERTON,
Secretary Official Arbitrators.

QUEBEC, 31st December, 1863.

PROVINCE OF CANADA for Provincial Steamers, in account current with Department of Public Works.

1862	Dr.	\$ cts.	1862	Cr.	\$ cts.
Dec. 31.....	To Stock of coals, &c., on hand used in 1862.....	5543 50	December 31.....	By Balance.....	21970 96
	To balance.....	16427 46			
		21970 96			21970 96
1863			1863		
Dec. 31.....	To amount expended in 1863, for outfit, fuel, running expenses and repairs.....	59365 39	January 1.	By Balance.....	16427 46
	" amount expended rebuilding "Advance".....	12122 93	October 31.....	" appropriation for 1863, 27 Viet., ch. 1.....	20000 00
	" do do "La Canadienne".....	7273 83	December 31.....	" Revenue for 1863 paid Receiver General.....	35631 87
	" amount paid for advertising sale of steamers.....	94 94		" proceeds of old iron and masts belonging to "La Canadienne," paid Receiver General.....	342 20
	" Stock of coals, &c., on hand in 1863, used in 1863.....	5000 00		" this amount, placed to the debit in 1861 to meet extraordinary repairs not proceeded with until 1863.....	7000 00
				" balance.....	4565 56
		\$83867 09			\$83867 09
1863			1863		
Dec. 31.....	To balance at debit of Steamers.....	4565 56	December 31.....	By stock of coals, &c., on hand, available for 1864.....	8867 80
	To balance.....	2303 24			
		\$6867 80			\$6867 80
			1863		
			December 31.....	By balance.....	\$7302 24

DEPARTMENT OF PUBLIC WORKS, }
February, 1864.

J. BAINE,
Book-keeper.

APPENDIX L.

CEDARS, 21st October, 1863.

T. TRUDEAU, Esq.,
Secretary of Public Works, Quebec.

SIR,—I beg to transmit you herewith the detailed estimates, shewing the probable cost of repairing the landing piers on the north and south shores of the St. Lawrence, below Quebec. (*Not printed.*)

They would have been furnished a fortnight ago had I not been sent off unexpectedly to Lindsay.

The amount required to put each pier in a proper state of repair, or to restore each to its proper condition, has been estimated thus, viz :—

At Eboulements, on north shore.	\$ 345.50
Malbaie, " " Part of iron required is in Malbaie Jail. - - - - -	281.03
At Berthier, on south shore. (I am not aware that any repairs have been done to this pier hitherto) - - - - -	403.20
At L'Islet, on south shore. (More traffic at this pier, apparently, than at any of the others. Some plank and timber on the spot) .	583.05
At Rivière Ouelle, on the south shore - - - - -	151.66
At Rivière du Loup, on the south shore - - - - -	572.24
At Rimouski, " " " (Exclusive of new work done)	674.13

Total probable cost of repairs - - - - - \$3,010.80

The repairs to be done consist chiefly in the replacing of the iron straps, fenders, sheeting and planking torn off from the ends and sides of the piers, and from the slips thereof, by the ice or the vessels frequenting the same.

In other respects all the piers are generally in good order. This, I believe, is the ninth or tenth year since they were constructed. Their present condition shows that nothing has been expended on them hitherto, but what was essential to render them substantial and durable, and that the work formerly done has been well done in its most important parts.

IRON STRAPPING AND BOLTS.

In repairing the iron work it is advisable that the heads of all the bolts for the straps to be put on, should be countersunk and the bolts should be ragged, as they will then be less liable to be drawn out, not only by the ice but especially by those, who I am told, make it a practice to tear off the iron straps and to dispose of them afterwards ; when the straps are torn off by ice, or vessels, they fall generally into the rivers, where several of them have been already found, and might still be found if a slight remuneration was offered to the boatmen at each locality. Some of the angle straps are fastened partly with copper bolts ; although these resist the action of the salt water better than the iron bolts, because the heads last longer, their use is not advisable ; because, the first place, they are too expensive ; and, in the second place, they offer too much temptation to draw them out.

FENDERS.

Many of the fenders have been torn off for the want of proper heads to the bolts ; this should be provided against hereafter. The L'Islet and Rimouski piers are those that have suffered the most in this respect ; there and elsewhere several of the fenders have been either split in two, or almost worn away by the ice ; the new fenders should be of tamarack, red pine or black birch.

ZINC COVERS FOR SNUBBING POSTS.

At most of the piers the zinc covers put on the heads of the snubbing posts have been cut through purposely with axes, or pierced with musket shot, nails, walking canes and otherwise, against which cast iron covers alone would be secure; but these, of course, would be too expensive, owing to the great number required and the price of each, say \$4. I have, therefore, estimated new zinc covers, of No 15 zinc, to restore the damaged, or missing ones, to preserve the posts against rot. With the exception of Berthier, where nearly all the posts are decayed, the posts elsewhere appear to be generally sound; those at Berthier are of elm, which seems to account for their rapid decay.

FLOORING AND SIDEWALKS.

At Berthier all the planking at the outer end of the pier and part of that on the sidewalks is decayed and requires renewal, together with the kerb-pieces or binders. At L'Islet a portion of the planking and kerb-pieces on the top of the pier is worn out, owing to the cartage and piling of large quantities of firewood, of which there were upwards of 40 cords ready for loading at the time of my inspection. Any replanking done hereafter on the tops of the piers should be fastened with 6-inch nails of about 14 to the pound, instead of spikes, which would save a considerable quantity of iron; the planking of some of the greatest thoroughfares of Quebec is fastened with such nails, which are found to be quite sufficient, after an experience of several years.

PAVING OF SLIPS.

The slips at Malbaie and L'Islet are those that have suffered the most, and where repaving is the most, urgently required; they should be repaired this fall if possible.

SIDE TIMBERS.

The slide timbers at the ends of the piers at L'Islet and Rivière du Loup, at or near the line of low water of spring tides, require to be repaired to prevent the escape of the stone filling; a few pieces of timber, if put in immediately, would secure such portions of the works against further damages during the coming winter.

At L'Islet part of the plank and timber required is already on the spot.

The first three piers to be attended to, therefore, are those of L'Islet and Rivière du Loup and Malbaie.

If the season was not so far advanced it would have been desirable to do all the repairs this fall, in order to secure the piers against still further damage during the winter.

If, with the exception just noted, the repairs are postponed until next spring, I do not, however, anticipate any material damage, excepting the loss of some of the iron strapping—several straps on the angles and sides of the piers being partly loose for the want of proper bolting; but these might be secured at once, during one tide or two, by a couple of men provided with 6 and 9-inch spikes at each of the piers.

Apart from the item of repairs enumerated in the estimates, it is possible that there may be others required near the line of extreme low water of spring tides, especially at the outer ends of the piers, when the ice appears to do the greatest damage, and which I could not see, the water not being at its lowest level.

The tolls that might be levied, and the regulations necessary for the future maintenance of various landing piers, will form the subject of another letter, so soon as other important matters now being attended to, will be disposed of.

I have the honor to be, sir,

Your most obedient servant,

(Signed) G. F. BAILLARGÉ.

APPENDIX M.

No. 1.—STATEMENT shewing the opening and closing of navigation at the Ports of QUEBEC, MONTREAL, and KINGSTON; (furnished by the Collectors of Customs of the respective places.)

Year.	PORT OF QUEBEC.			PORT OF MONTREAL.			PORT OF KINGSTON.	
	ARRIVALS.		Sailed for sea.	No. of days from first arrival to sailing of last vessel.	First Steamer for Quebec.	Last Steamer for Quebec.	Days of Navigation.	Number of days.
	From Montreal. Steamer.	From sea. Ship.						
1830	April 17	April 26	December 4	232	.....	.....	.....	.....
1831	" 21	" 16	November 30	229	.....	.....	December 19 .....	.....
1832	" 29	May 4	" 30	216	.....	.....	" 4	222
1833	" 18	" 10	" 25	222	.....	.....	Jan. (1834) 1	270
1834	" 18	" 6	" 24	221	.....	.....	December 22	279
1835	May 4	" 2	" 26	209	.....	.....	" 31	270
1836	" 11	" 11	" 25	199	.....	.....	" 26	248
1837	" 1	April 29	" 18	204	.....	.....	Jan. (1838) 16	281
1838	April 28	May 3	" 20	207	.....	.....	December 18	257
1839	" 21	" 8	" 23	217	.....	.....	" 26	265
1840	" 19	April 25	" 29	225	.....	.....	" 23	280
1841	May 1	" 29	" 28	214	.....	.....	March 19	253
1842	April 21	May 3	" 28	222	.....	.....	April 23	283
1843	May 5	April 18	" 28	225	.....	.....	March 24	254
1844	April 23	May 3	" 23	215	.....	.....	April 25	310
1845	" 25	" 1	" 26	216	.....	.....	March 9	274
1846	" 17	April 24	" 27	225	.....	.....	April 2 .....	.....
1847	May 8	May 8	" 26	202	.....	.....	March 31 .....	.....
1848	April 6	" 1	" 21	230	.....	.....	April 11	271
1849	" 25	April 28	" 25	215	.....	.....	" 3	272
1850	" 26	" 28	" 28	218	.....	.....	" 31	273
1851	" 22	" 20	" 29	223	.....	.....	" 26	266
1852	" 30	" 15	December 4	219	April 21	November 30	" 22	265
					" 28	December 13	Jan. 14, 1853	271

APPENDIX M.

No. 1.—STATEMENT shewing the opening and closing of navigation at the Ports of QUEBEC, MONTREAL, and KINGSTON ; (furnished by the Collectors of Customs of the respective places.)—Continued.

Year.	PORT OF QUEBEC.				PORT OF MONTREAL.				PORT OF KINGSTON.			
	ARRIVALS.		Sailed for sea.	No. of days from first arrival to sailing of last vessel.	First Steamer for Quebec.	Last Steamer for Quebec.	Days of Navigation.	Open.	Closed.	Number of days.		
	From Montreal. Steamer.	From sea. Ship.										
1853.....	April 23.....	April 24.....	November 26.....	218	April 20.....	December 1.....	226	April 4.....	Jan. 5, 1854.....	277		
1854.....	May 5.....	" 9.....	" 29.....	208	May 1.....	" 2.....	216	" 10.....	" 13, 1855.....	279		
1855.....	" 6.....	May 6.....	" 22.....	200	" 5.....	November 22.....	201	" 17.....	" 1, 1856.....	260		
1856.....	April 27.....	April 28.....	" 23.....	211	April 29.....	" 25.....	211	" 8.....	December 31.....	268		
1857.....	" 17.....	" 20.....	" 24.....	222	" 29.....	December 5.....	215	" 2.....	Feb. 2, 1858.....	307		
1858.....	" 18.....	" 28.....	" 25.....	222	" 16.....	November 30.....	229	" 26.....	Jan. 8, 1859.....	258		
1859.....	" 22.....	" 29.....	" 28.....	221	" 12.....	" 26.....	229	" 15.....	December 25.....	255		
1860.....	" 26.....	" 28.....	" 26.....	215	" 16.....	December 2.....	231	" 12.....	Jan. 10, 1861.....	274		
1861.....	" 26.....	" 22.....	December 2.....	221	" 26.....	" 2.....	221	" 8.....	" 4, 1862.....	272		
1862.....	" 30.....	" 16.....	November 29.....	214	" 29.....	November 29.....	215	" 14.....	" 17, 1863.....	279		
1863.....	May 3.....	May 4.....	" 27.....	209	May 2.....	" 30.....	213	" 16.....	" 1, 1864.....	261		

No 2.—STATEMENT shewing the opening and closing of the Welland, Burlington Bay, Williamsburg, Cornwall, Beauharnois, and Lachine Canals, St. Anne's Lock, Ottawa River, St. Ours' Lock, and Chambly Canal.

Year.	WELLAND CANAL.			WILLIAMSBURG CANALS.			CORNWALL CANAL.			BEAUHARNOIS CANAL.		
	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.	Opened.	Closed.	No. of days open.
1831...	April 8.....											
1832...	May 15.....											
1833...	do 20											
1834...	April 10.....	November 15...	220									
1835...	May 1											
1836...	April 28											
1837...	May 5											
1838...	April 5											
1839...	.....										
1840...	April 2	December 1.....	244									
1841...	May 4	do 6.....										
1842...	.....										
1843...	.....	December 4.....										
1844...	April 1	do 4.....	248.				April 10.....	November 28...	233			
1845...	May 7	November 29...	207				do 24.....	December 2...	223			
1846...	April 3	December 15...	257				do 28	November 29...	216	October 11.....	November 26...	47
1847...	do 14.....	do 9.....	240				do 20.....	December 2...	227	April 16.....	do 29...	228
1848...	do 10.....	do 19.....	258				May 1	do 4.....	218	May 5.....	do 28...	209
1849...	do 3	do 7.....	249	April 13.....	December 6...	238	April 7.....	do 9.....	247	April 12.....	do 30...	233
1850...	do 1	do 12.....	255	do 9.....	do 15...	251	do 7.....	do 6.....	244	do 19.....	December 8...	234
1851...	March 25.....	do 12.....	261	do 27.....	do 10...	228	do 20.....	do 7.....	232	do 26.....	do 4...	223
1852...	April 13.....	do 14.....	245	do 25.....	November 25...	215	do 25.....	do 12...	232	do 25.....	November 25...	215
1853...	do 1	do 17.....	261	do 13.....	do 24...	226	do 1.....	do 16...	230	do 2.....	December 13...	226
1854...	do 3	do 4.....	.....	May 1	December 1...	215	May 29.....	do 14...	230	April 29.....	November 24...	209
1855...	do 16.....	do 12.....	241	do 3	do 8.....	220	April 30.....	do 10...	225	May 1.....	December 2...	216
1856...	do 26.....	do 13.....	232	April 20	do 15...	230	do 30.....	do 18...	233	do 1.....	November 28...	212
1857...	May 1	do 15...	229	do 28.....	do 6.....	223	do 28.....	do 6.....	223	do 1.....	December 1...	215
1858...	April 7	do 7.....	245	May 1	do 12...	226	May 1.....	do 12...	226	do 2.....	November 26...	209
1859...	do 1	do 8.....	252	April 25.....	do 11...	231	April 26.....	do 7.....	226	April 26.....	do 26...	215
1860...	do 1	do 6.....	250	do 30.....	do 30...	220	do 20.....	do 7.....	232	do 19.....	do 29...	225
1861...	do 8.....	do 12...	249	do 21.....	do 10...	234	do 21.....	do 10...	234	do 19.....	December 3...	229
1862...	do 15.....	do 15...	246	do 24.....	do 10...	231	do 24.....	do 12...	233	do 24.....	do 3...	224
1863...	do 18.....	do 18...	246	do 29.....	do 4.....	218	May 1.....	do 8.....	222	do 30.....	November 30...	215
				May 1	do 7.....	221	do 2	do 12...	225	May 2.....	December 4...	217

No. 3.—The following table, taken from the report of the Canal Commissioners of the State of New York, shows the date of opening and closing of the Hudson river; also the time of opening and closing the Erie Canal, from 1824 to 1862, and the opening of lake Erie, from 1827 to 1862.

OPENING AND CLOSING OF THE HUDSON RIVER.			COMMENCEMENT AND CLOSE OF NAVIGATION OF ERIE CANAL.			
River open.	River closed.	Open days.	Canal open.	Canal closed.	Navigable days.	Opening of the Lake.
March 3, 1824.....	January 5, 1825.....	309.....	April 30, 1824.....	December 4.....	219.....	April 21, 1827.....
do 6, 1825.....	December 13, 1825.....	283.....	do 12, 1825.....	do 5.....	238.....	do 1, 1828.....
February 25, 1826.....	do 24, 1826.....	302.....	do 20, 1826.....	do 18.....	243.....	May 10, 1829.....
March 20, 1827.....	November 25, 1827.....	251.....	do 22, 1827.....	do 18.....	241.....	do 5, 1830.....
February 8, 1828.....	December 23, 1828.....	220.....	March 27, 1828.....	do 20.....	269.....	do 8, 1831.....
April 1, 1829.....	January 11, 1830.....	286.....	May 2, 1829.....	do 17.....	230.....	April 27, 1832.....
March 15, 1830.....	December 25, 1830.....	283.....	April 20, 1830.....	do 17.....	242.....	do 23, 1833.....
do 15, 1831.....	do 6, 1831.....	263.....	do 16, 1831.....	do 1.....	230.....	do 6, 1834.....
do 25, 1832.....	do 21, 1832.....	289.....	do 25, 1832.....	do 21.....	241.....	May 8, 1835.....
do 21, 1833.....	do 13, 1833.....	277.....	do 19, 1833.....	do 12.....	238.....	April 27, 1836.....
February 29, 1834.....	do 15, 1834.....	291.....	do 17, 1834.....	do 12.....	240.....	May 16, 1837.....
March 25, 1835.....	November 30, 1835.....	268.....	do 15, 1835.....	November 30.....	230.....	March 31, 1838.....
April 4, 1836.....	December 7, 1836.....	248.....	do 25, 1836.....	do 26.....	216.....	April 11, 1839.....
March 27, 1837.....	do 14, 1837.....	261.....	do 20, 1837.....	December 9.....	234.....	do 27, 1840.....
do 19, 1838.....	November 25, 1838.....	257.....	do 12, 1838.....	November 25.....	228.....	do 14, 1841.....
do 25, 1839.....	December 18, 1839.....	286.....	do 20, 1839.....	December 16.....	241.....	March 7, 1842.....
February 25, 1840.....	do 5, 1840.....	285.....	do 20, 1840.....	do 3.....	228.....	May 6, 1843.....
March 24, 1841.....	do 19, 1841.....	286.....	do 24, 1841.....	November 30.....	221.....	March 14, 1844.....
February 4, 1842.....	November 28, 1842.....	308.....	do 20, 1842.....	do 28.....	222.....	April 3, 1845.....
April 13, 1843.....	December 10, 1843.....	242.....	May 1, 1843.....	do 30.....	214.....	do 11, 1846.....
March 18, 1844.....	do 17, 1844.....	278.....	April 18, 1844.....	do 26.....	222.....	
February 24, 1845.....	do 3, 1845.....	283.....	do 15, 1845.....	do 29.....	228.....	
March 18, 1846.....	do 14, 1846.....	275.....	do 16, 1846.....	do 25.....	224.....	

April 7, 1847.....	December 25, 1847.....	263.....	May 1, 1847..	November 30.....	214.....	April 23, 1847.....
March 22, 1848.....	do 27, 1848.....	292.....	do 1, 1848.....	December 9.....	223.....	do 9, 1848.....
do 19, 1849.....	do 26, 1849.....	286.....	do 1, 1849.....	do 5.....	219.....	March 25, 1849.....
do 10, 1850.....	do 17, 1850.....	282.....	April 22, 1850.....	do 11.....	234.....	do 25, 1850..
February 25, 1851.....	do 14, 1851.....	293.....	do 15, 1851.....	do 5.....	235.....	April 2, 1851.....
March 28, 1852.....	do 22, 1852.....	270.....	do 20, 1852.....	do 16.....	239.....	do 20, 1852.....
do 23, 1853.....	do 21, 1853.....	274.....	do 20, 1853.....	do 20.....	245.....	do 14, 1853.....
do 17, 1854.....	do 8, 1854.....	266.....	May 1, 1854.....	do 3.....	217.....	do 29, 1854.....
do 27, 1855.....	do 20, 1855.....	268.....	do 1, 1855.....	do 10.....	224.....	do 21, 1855.....
April 11, 1856.....	do 14, 1856.....	248.....	do 5, 1856.....	do 4.....	214.....	May 2, 1856..
February 27, 1857.....	do 27, 1857.....	303.....	do 6, 1857.....	do 15..	223.....	April 27, 1857.....
March 20, 1858.....	do 17, 1858.....	273.....	April 28, 1858.....	do 8.....	225.....	do 15, 1858.....
do 13, 1859.....	do 10, 1859.....	273.....	do 15, 1859.....	do 12.....	242.....	do 7, 1859.....
do 6, 1860.....	do 14, 1860.....	283.....	do 25, 1860.....	do 12.....	232.....	do 17, 1860.....
do 5, 1861.....	do 23, 1861.....	294.....	May 1, 1061.....	do 10.....	224.....	do 13, 1861.....
April 4, 1862.....	do 19, 1862.....	259.....	do 1, 1862.....	do 10.....	224.....	

APPENDIX N.

STATEMENT of the amount of produce received at Port of Montreal by Steamers and all other Vessels, *via* the St. Lawrence Canals, during the navigable season of 1861.

	Flour.	Wheat.	Indian Corn.	R e.	Peas.	Oats.	Barley.	Ashes.	Pork.	Beef.	Butter.	Apples.
	Barrels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
By steam vessels, 1861.....	577,197	703956	128268	10296	190674	16857	14952	.....	8440	.....	.....	.....
Sailing Vessels.....	190,922	5885138	142741	14220	1190805	88424	111636	.....	1584	.....	.....	.....
	768,119	6589094	1555686	24516	1381479	105281	126588	11553	10024	245	39380	45549
By steam vessels, 1862.....	696,092	394499	92904	4536	68129	20608	26103	10079	18316	.....	13083	64912
Sailing vessels	74,902	7413862	2591436	76590	449443	63644	201642	817	5305	497	864	3551
	770,994	7808361	2684340	81126	517572	84252	277705	10896	23621	497	13947	68463
By steam vessels, 1863.....	603,819	416460	11376	.....	109081	5712	31416	12000	18830	512	7675	73522
Sailing vessels.....	94,036	4576902	790398	32256	591377	313432	251286	1100	6720	622	298	4728
	697,855	4993362	801774	32256	700458	319144	282702	13200	25550	1134	7973	78250

LAACHINE CANAL OFFICE,
Montreal, 25th January, 1864. }

(Signed) ALFRED GOUGH,
Collector.

LACHINE CANAL.

No. 1.—STATEMENT shewing the number and class of vessels and freight which passed downwards through the Lachine Canal during the following mentioned years.

Years.	200 Tons and under. (Trips.)			200 to 300 Tons. (Trips.)			300 to 400 Tons. (Trips.)			Total number of Trips.			Freight.			Vessels passed through Lock No. 1.			Total num- ber of Trips.		
	Steamers.	Propellers.	Sailing Vessels.	Steamers.	Propellers.	Sailing Vessels.	Steamers.	Propellers.	Sailing Vessels.	Grain.	Barrels.	Flour.	Other Freight—Tons.	Firewo'd No. of Cords.	200 Tons and under.		300 to 400 Tons.			200 to 300 Tons.	
															Steamers.	Propellers.	Steamers.	Propellers.		Steamers.	Propellers.	Steamers.	Propellers.	Sailing Vessels.
1856	596	196	2946	7137	123	...	657	233	3111	2583030	...	667520	256594	61524	...	...	...	...	...	...
1859	598	269	2954	7462	172	...	672	311	3154	1542330	...	521874	305103	60184	...	...	...	...	...	...
1860	623	307	2966	6040	213	...	683	347	3223	4711294	...	636327	327424	62223	...	...	...	...	...	...
1861	732	308	3645	5079	248	...	752	387	3947	9782643	...	768119	353291	64081	...	...	...	...	...	...
1862	844	38	3735	8155	176	...	945	94	3946	1140330	...	770994	333999	64458	...	...	...	...	...	...
1863	94	28	4089	5642	102	...	1012	70	421	7129696	...	697555	390466	69562	...	...	...	...	...	...

ALFRED GOUGH,
Collector

(Signed)

MONTREAL, January 25th, 1864

APPENDIX O. (2.)

LACHINE CANAL.

No 2—Statement shewing the number and class of vessels and freight which passed upwards through the Lachine Canal during the following mentioned years

Years.	200 Tons and under. (Trips.)						200 to 300 Tons. (Trips.)						300 to 400 Tons. (Trips.)						Vessels passed through Lock No. 1.						Total number of Trips.						
	Steamers.		Sailing Vessels.		Propellers.		Steamers.		Sailing Vessels.		Propellers.		Steamers.		Sailing Vessels.		Propellers.		Steamers.		Sailing Vessels.		Propellers.			Steamers.		Sailing Vessels.		Propellers.	
	Trips.		Trips.		Trips.		Trips.		Trips.		Trips.		Trips.		Trips.		Trips.		Trips.		Trips.		Trips.			Trips.		Trips.		Trips.	
	Tons.		Tons.		Tons.		Tons.		Tons.		Tons.		Tons.		Tons.		Tons.		Tons.		Tons.		Tons.			Tons.		Tons.		Tons.	
1858...	594	194	3045	77	36	159	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1859...	100	262	3182	79	40	220	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1860...	63	302	2716	67	31	228	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1861...	73	283	4081	50	73	262	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1862...	85	40	4296	78	53	171	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1863...	503	27	4237	56	40	166	

(Signed) ALFRED GOUGH.

MONTREAL, 25th January, 1864





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